

Introduction to the Guest Editors of the *American Journal of Obstetrics & Gynecology* Supplement on Preeclampsia 2022



Roberto Romero, MD, DMedSci



Dr Judette Louis

Dr Judette Louis is Chair of the Department of Obstetrics and Gynecology at the University of South Florida (USF). She holds joint faculty appointments in the USF College of Medicine and the College of Public Health. Dr Louis is the immediate past-president of the Society for Maternal-Fetal Medicine.

Dr Louis first encountered a patient with preeclampsia three weeks after she began her residency in Obstetrics and Gynecology at Case Western Reserve University—MetroHealth in Cleveland, Ohio. She was struck by the disease's severity and the implications for both maternal

and infant healthcare, and it proved to be the pivotal moment when she decided to pursue a career in Maternal-Fetal Medicine (MFM). On completion of an MFM Fellowship at Wayne State University School of Medicine and the Perinatology Research Branch of the intramural division of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, National Institutes of Health, US Department of Health and Human Services, in Detroit, Michigan, she embarked on the study of obstructive sleep apnea in pregnancy. At the time, little was known about the condition and its implications for maternal and infant health.

Dr Louis collaborated with sleep medicine experts and anesthesiologists to define the outcomes associated with sleep apnea in pregnancy. The most prominent finding of her early research, funded by the Robert Wood Johnson Foundation, was the relationship between sleep apnea and the subsequent development of preeclampsia. The data have supported and informed the current notion that sleep disorders are an important cause of preeclampsia.

Because of her findings, Dr Louis's focus turned toward preeclampsia in her clinical and research activities. She studied the relationship between preeclampsia and the short- and long-term risks of cardiovascular disease. She collaborates with clinicians and scientists to continue the investigation on pregnancy as a window to future healthcare for mothers and their children.

Dr Louis's commitment to study preeclampsia is not limited to research. Through her collaborative work with the USF College of Public Health and the Florida Perinatal Quality Collaborative, she has led statewide initiatives to help Florida hospitals implement safety bundles to improve preeclampsia management. She has also collaborated with scientists globally to educate healthcare professionals about the long-term implications of preeclampsia.

The diversity and breadth of Dr Louis's work are embodied in the numerous scientific articles and book chapters she has authored on sleep apnea, preeclampsia, and maternal morbidity and mortality. She is passionate about making pregnancy safer for all women and, in particular, improving maternal health across the lifespan.

From the Perinatology Research Branch, Division of Obstetrics and Maternal-Fetal Medicine, Division of Intramural Research, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, National Institutes of Health, US Department of Health and Human Services, Bethesda, MD, and Detroit, MI.

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Corresponding author: Roberto Romero, MD, DMedSci. rr.ajoged@gmail.com

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Dr Laura Magee

Professor Laura Magee, MD, FRCPC, MSc, is a general obstetrical internist (Internal Medicine and Clinical Pharmacology, Royal College of Physicians and Surgeons of Canada) and Fellow ad eundem, Royal College of Obstetricians and Gynaecologists, United Kingdom, with a Master of Science degree in clinical epidemiology. She has joined King's College London, United Kingdom, as Professor of Women's Health, following consultant posts at St. George's, University of London, United Kingdom, and the Universities of British Columbia and Toronto, Canada.

Professor Magee's clinical career has involved the care of women with various medical problems in pregnancy, and she chairs the Royal College of Obstetricians and Gynaecologists' Maternal Medicine Clinical Study Group and its Diabetes in Pregnancy Working Group. Her research has been focused on pregnancy hypertension and, particularly, antihypertensive therapy, utilizing a range of study designs.

Since her fellowship, Professor Magee has participated in the biannual meetings of the International Society for the Study of Hypertension in Pregnancy (ISSHP). She was corecipient (with Professor Peter von Dadelszen) of the 2014 ISSHP Chesley Award for career contributions to pregnancy hypertension research and mentorship. She is the current president of ISSHP, an invaluable source of academic and personal mentorship. Through her involvement in the organization, she met Professor von Dadelszen, her husband and partner in all things.

Professor Magee's greatest achievement in pregnancy hypertension has been the Control of Hypertension In Pregnancy (CHIPS) trial, which answered a long-standing question in maternity care and transformed her approach from a "less tight" to a "tight" controller of this complication. She continues to work with international colleagues to

translate CHIPS findings into practice—the less glamorous part of undertaking a randomized trial!

Notable publications include systematic reviews of anti-hypertensive therapy and proteinuria in pregnancy, both antepartum and postpartum; elucidative reports on the association between blood pressure variability and adverse pregnancy outcomes; the demonstration of pregnancy outcomes that are similar to methyldopa and labetalol; analyses showing that severe hypertension is a risk factor for adverse outcomes similar to preeclampsia; the trade-off between fetal growth and gestational age at delivery in determining perinatal outcome in pregnancy hypertension; the prediction of adverse maternal outcome in preeclampsia; and the value of a broad (vs traditional) definition of preeclampsia.

Highlights of Professor Magee's global health work encompass community-level interventions in preeclampsia, blood pressure diagnosis, deep-phenotyping of placental disorders (PREgnancy Care Integrating translational Science, Everywhere [PRECISE] Network), and antihypertensive therapy.

Finally, Professor Magee has established the clinical practice guidelines for pregnancy hypertension in Canada and for ISSHP. She has also supported and interacted with the Preeclampsia Foundation from its earliest days.



Dr Liona Poon

Dr Liona Poon, MBBS, MRCOG, MD(Res), Cert RCOG, is Professor of Obstetrics and Gynecology and an academic subspecialist in Maternal-Fetal Medicine at the Chinese University of Hong Kong, Hong Kong SAR, China, and Visiting Professor at the Department of Women and Children's Health, King's College London. Devoted to improving maternal and fetal health, she has contributed a prolific research output throughout her clinical and research posts, including more than 200 peer-reviewed

publications in high-impact international journals that address obstetrics, gynecology, and hypertension (h-index 50).

Personalized medicine, typified in pregnancy by the stratification of risk in the early weeks of gestation and by subsequent evidence-based interventions, could be considered many years ahead of other disciplines, and Dr Poon has made significant contribution to these advances.

For the last 15 years, she focused her research on establishing a program for effective early prediction and prevention of preeclampsia, a major cause of maternal and perinatal morbidity and mortality. In 2009, Dr Poon became the first researcher to develop an effective first-trimester prediction model based on a combination of maternal factors, mean arterial pressure, uterine artery Doppler, serum pregnancy-associated plasma protein-A, and placental growth factor for early-onset preeclampsia, achieving a detection rate of 90% at a 5% false-positive rate.

Working together with the Fetal Medicine Foundation, Dr Poon derived the first-trimester prediction model from a multivariate logistic regression model, and the model evolved into a novel Bayes theorem-based model that incorporates a survival-time model for gestational age at delivery with preeclampsia. The use of the Bayes theorem-based method is beneficial, particularly when future research identifies new effective biomarkers, which can easily be incorporated within the Bayes paradigm.

Recognizing the importance of blood pressure in the screening of preeclampsia, Dr Poon developed a standardized protocol to measure mean arterial pressure that accounts for the need of repeated measurements and the significant interarm difference in blood pressure. Her work in preeclampsia led to a double-blinded, randomized, controlled trial of low-dosage aspirin in pregnancies identified as high-risk for preeclampsia following first-trimester screening (Combined Multimarker Screening and Randomized Patient Treatment with Aspirin for Evidence-Based Preeclampsia Prevention [ASPREE] trial), and Dr Poon is the co-chief investigator of the project. The trial demonstrated that the use of low-dosage aspirin from 11 to 14 weeks of gestation reduced the rate of preterm preeclampsia with delivery before 37 weeks of gestation by 62% (placebo 4.3% vs aspirin 1.6%; odds ratio 0.38). This work gained tremendous attention internationally. The ASPREE trial, a landmark study, illustrated the possibility of effective first-trimester screening and prevention of pregnancy complications.

With her success in developing a first-trimester prediction model for preeclampsia using maternal factors, ultrasound, blood pressure, and biochemical markers, and in aspirin prophylaxis against preeclampsia, Dr Poon's goal in the next 10 years is to improve obstetrical care worldwide, through clinical research, education, and advocacy.



Dr Joanne Stone

Since 2020, Dr Joanne Stone, MD, MSc, has served as Associate Editor for Expert Reviews and Clinical Opinions for the *American Journal of Obstetrics & Gynecology*. She is Professor of Obstetrics, Gynecology, and Reproductive Science and the System Director of Maternal-Fetal Medicine for the Mount Sinai Healthcare System in Manhattan, New York, at the Icahn School of Medicine at Mount Sinai. She also serves as president-elect for the Society of Maternal-Fetal Medicine.

Dr Stone completed her residency in Obstetrics and Gynecology and fulfilled a Fellowship in Maternal-Fetal Medicine (MFM) at the Icahn School of Medicine at Mount Sinai, where she was subsequently appointed as and continued on as a full-time faculty member.

It is interesting to note that Dr Stone's very first publication occurred during her MFM Fellowship when she co-authored the study titled "Association between pregnancy-induced hypertension and asthma during pregnancy" in 1993.

Shortly thereafter, she became interested in the risk factors associated with severe preeclampsia (now termed preeclampsia with severe features). In 1994, Dr Stone published her findings, reporting that the only risk factors associated with the development of severe preeclampsia were obesity in all patients and a history of preeclampsia in multiparous patients—findings which have stood true over time. Her interest in severe preeclampsia resulted in a review article, authored by the Publications Committee of the Society for Maternal-Fetal Medicine, which focused on the evaluation and management of severe preeclampsia in early preterm gestation. Dr Stone also served on the Publications Committee.

Her astute recognition of the need for more data about the differences between twin and singleton gestations in severe preeclampsia led to a retrospective cohort study that compared the outcomes of the mothers who had a twin or a singleton pregnancy and were hospitalized with severe preeclampsia. Contrary to her hypothesis, she found that mothers and neonates in twin pregnancies complicated by severe preeclampsia did not seem to have a greater outcome of morbidity or mortality than mothers and neonates in singleton pregnancies also complicated by severe preeclampsia.

More recently, as postpartum preeclampsia has increasingly become recognized as a potential cause of severe maternal morbidity, Dr Stone and her colleagues sought to determine the risk factors for new-onset, late-postpartum preeclampsia in women without a history of this pregnancy complication. Their work reported that the characteristics of older maternal age, Black race, Latina ethnicity, obesity, and complications of gestational diabetes mellitus were all associated positively with the development of new-onset, late-postpartum preeclampsia. In this supplement, there is an excellent paper that specifically addresses this entity.



Ms Eleni Tsigas

Eleni Z. Tsigas is Chief Executive Officer of the Preeclampsia Foundation, the patient advocacy organization for hypertensive disorders in pregnancy, headquartered in the United States with an affiliate foundation in Canada. The Foundation's key programs include the Preeclampsia Registry, the Promise Walk for Preeclampsia, MoMMA's Voices, the Cuff Kit Project, the Peter Joseph Pappas Research Grants, and the Vision Grants.

A survivor of preeclampsia, Ms Tsigas is a fierce, relentless champion for the improvement of patient outcomes. Her dedication is evidenced through her personal advocacy with leaders and stakeholders in the field of preeclampsia, and as a community builder, enabling and coalescing the voices of the affected community to advance research, healthcare practices, and patient education and support.

Ms Tsigas's leadership and expertise in the field brought about appointments to serve in (at least) three important advisory roles. A member of the Task Force on Hypertension in Pregnancy, convened by the American College of Obstetricians and Gynecologists (ACOG), she was instrumental in the development of the report, "Hypertension in pregnancy," published in 2013. In addition, she later served on the ACOG Task Force on Pregnancy and Heart Disease, a multidisciplinary team of experts that published the "ACOG Practice Bulletin No. 212: pregnancy and heart disease" in 2019. Ms Tsigas continues to serve as a technical advisor to the World Health Organization (WHO) and as a member of the WHO Guideline Development Group that produced the report

titled "WHO Recommendations for the Prevention and Treatment of Pre-eclampsia and Eclampsia" in 2011, and subsequent updates related to hypertension in pregnancy.

Further, Ms Tsigas has assisted several state-based Perinatal Quality Collaboratives in California, Florida, and Indiana, and, currently, as a member of the respective task forces on preeclampsia.

She represents the Preeclampsia Foundation as a member of the Council on Patient Safety in Women's Health Care; a supporting partner of the Alliance for Innovation on Maternal Health Program; a member of the Patient Advisory Board of Improved Pregnancy Outcomes via Early Detection in Ireland; and as a member of the Technical Advisory Groups for PRE-eclampsia & Eclampsia Monitoring, Prevention & Treatment (PRE-EMPT) and the PRECISE Network, both recognized as global health research programs.

Frequently engaged as a consumer expert at national and international meetings for academia, industry, and professional societies, Ms Tsigas also collaborates in numerous research studies and has authored invited chapters and papers in peer-reviewed journals. She is the principal investigator for the Preeclampsia Registry, an active database of more than 7000 participants contributing to numerous research studies, and a coinvestigator in the Heart Health for Moms study.

A public relations veteran before joining the Preeclampsia Foundation, Ms Tsigas managed strategic communications and public relations for technology and biotech companies with Waggener Edstrom Worldwide. She has also worked in the television industry.

Ms Tsigas survived severe preeclampsia twice, though her first-born daughter did not.



Dr Stefan Verlohren

Stefan Verlohren, MD, PhD, is Professor of Obstetrics and the Maternal-Fetal Medicine (MFM) Consultant for the Department of Obstetrics, Charité-Universitätsmedizin Berlin, Berlin, Germany. His clinical work is centered on high-risk pregnancy care and the prenatal diagnosis of and therapy for fetal malformations. He leads a team of specialists

dedicated to high-risk pregnancies, especially patients who present with preeclampsia and fetal growth restriction.

After studying medicine in Marburg, Berlin, and Lausanne, he was trained in Obstetrics and Gynecology and MFM at the Charité Berlin. He completed a postdoctoral Research Fellowship at the Max-Delbrück Center for Molecular Medicine, Berlin, and a Clinical Fellowship at the Fetal Medicine Unit, St. George's Hospital, London. In 2019, he was appointed Professor at the Charité.

Professor Verlohren's main research interest is preeclampsia, and he leads the Preeclampsia Research Group at the Charité. Their special emphases in clinical and basic research are placental dysfunction and preeclampsia. After extensive work on animal models of preeclampsia, the focus is now mainly on clinical research. His group conducted and contributed to various clinical studies on the use of the angiogenic and antiangiogenic markers in prediction, diagnosis, and prognosis of preeclampsia.

Their current work is focused on the implementation of the soluble fms-like tyrosine kinase-1/placental growth factor ratio in the clinical routine in Germany and beyond. Furthermore, the group now explores integrating digital solutions into the clinical work-up of high-risk pregnant patients to improve their care. Dr Verlohren has published more than 70 research articles and reviews with an h-index of 34.

Dr Verlohren serves as a member of the German Guideline Committee on Hypertensive Pregnancy Disorders and of the Executive Committee for the European Association of Perinatal Medicine; he is a board member of the German Society for Perinatal Medicine and Obstetrics. He serves as the associate editor of two journals, *Fetal Diagnosis and Therapy* and *Archives of Gynecology and Obstetrics*.



Dr Peter von Dadelszen

A dual citizen of New Zealand and Canada and a permanent resident of the United Kingdom, Peter von Dadelszen, BMedSc, MbChB, DipObst (Otago), DPhil (Oxon), FRANZCOG, FRCSC, FRCOG, is Professor of Global Women's Health at King's College London and honorary consultant obstetrician at King's Health Partners (London, United Kingdom). An accredited obstetrician in Maternal-

Fetal Medicine (MFM), he is married to Laura Magee, Professor of Women's Health at King's College London, with whom he leads a women's health research group.

Now with more than 35 years of postgraduate clinical experience, Professor von Dadelszen spent his undergraduate and early postgraduate training years in New Zealand, and he completed his general obstetric and gynecologic training in the United Kingdom, where he also undertook his doctoral training with Professor Chris Redman (and met Professor Magee). Following MFM and postdoctoral research training in Toronto, he was at the University of British Columbia and BC Women's Hospital, Canada for 15 years (2000–2015) and at St. George's, University of London, for two years (2015–2017).

Increasingly, over the past 11 years, Professor von Dadelszen's research has focused on less-developed countries. Initially, as the principal investigator of the PRE-EMPT initiative funded by the Bill & Melinda Gates Foundation (2010–2019), he led research spanning qualitative assessment of barriers and facilitators of maternal health, health geography and economics, population health, outcome prediction, medical device development and testing, task sharing, individual and cluster randomized controlled trials, at-scale implementation, global basic science collaboration, knowledge translation, and advocacy. PRE-EMPT involved collaboration with colleagues, NGOs, and governments in Africa, Asia, Oceania, and Latin America, and engagement with the World Health Organization.

More recently, as principal investigator, Professor von Dadelszen initiated the United Kingdom Research and Innovation funded PRECISE Network (2017–2022) to build African research capacity through a project dedicated to deep-phenotyping approximately 6000 unselected pregnant women to understand pathways to resilient and complicated pregnancy outcomes in the Republic of The Gambia, Kenya, and Mozambique; the Network also involves health geography colleagues in Zimbabwe. This phenotyping includes biomarkers, infectious and noncommunicable disease burden, and social determinants of health. The PRECISE study of pregnant women and their infants (dyads) (2020–2023) in two sub-Saharan African countries, the Republic of The Gambia and Kenya, will achieve deep-phenotyping follow-up of both mothers and their infants up to three years of age.

Professor von Dadelszen's most important publications have reported on the meta-regression analysis of the interaction between blood pressure control and fetal growth velocity, which, in turn, led to Professor Magee's CHIPS trial; the development of the fullPIERS and miniPIERS models; the observation that placental growth factor can discriminate between constitutional small for gestational age and placental fetal growth restriction; and the PRE-EMPT-related Calcium and Pre-eclampsia trial, which assessed oral antihypertensives for severe pregnancy hypertension and Community-Level Interventions for Pre-eclampsia trials.

With Professor Magee, he was corecipient of the 2014 ISSHP Chesley Award for their career contributions to pregnancy hypertension research and mentorship. ■