



Baylor
College of
Medicine

DEPARTMENT OF
OBSTETRICS &
GYNECOLOGY

2019 CHAIR'S REPORT

DEPARTMENT OF
**OBSTETRICS AND
GYNECOLOGY**

RESEARCH • EDUCATION • COMMUNITY • HEALTHCARE

Baylor
College of
Medicine

DEPARTMENT OF
OBSTETRICS &
GYNECOLOGY

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WELCOME TO THE 2019 CHAIR'S REPORT OF THE DEPARTMENT OF OBSTETRICS AND GYNECOLOGY AT BAYLOR COLLEGE OF MEDICINE


In 2019, our reach was unprecedented, thanks to a tireless team of healthcare professionals intent on advancing OB/GYN care and outcomes through every means possible.

In the pages that follow, you'll find our physicians, researchers and educators sharing their skills, knowledge, time and talents with patients and colleagues around the world, making the most of every opportunity to improve the health of women and babies.

Their contributions to the field of OB/GYN have never been more diverse. Their impact has never been greater.

In 2019 these dedicated men and women served in more leadership roles, shaping national standards of care. They conducted more training. They collaborated with more counterparts across more borders. They achieved more "firsts" in fetal surgery. And they improved access to care for more women across the globe, ensuring more families can get the healthcare they need for the quality of life they deserve.

I couldn't be more proud of their progress or more grateful for all those who made it possible.



**Michael A. Belfort,
MBBCH, DA, MD, PhD,
FRCSC, FRCOG**

Ernst W. Bertner Chair and Professor
FB McGuyer Family Endowed Chair in
Fetal Surgery

Department of Obstetrics and
Gynecology

Professor, Department
of Anesthesiology

Professor, Department of Surgery

Baylor College of Medicine

Obstetrician-in-Chief

Texas Children's Hospital



2019 RESIDENTS MATCHING TO FELLOWSHIPS

Gian Diaz, MD: Maternal-Fetal Medicine Fellowship

Tamisa Koythong, MD: Minimally Invasive Surgery Fellowship

Emily Rutledge, MD: Female Pelvic Medicine Surgery Fellowship

Bahram Salmanian, MD: Maternal-Fetal Medicine Fellowship

Megan Whitham, MD: Maternal-Fetal Medicine Fellowship

Beth Zhou, MD: Reproductive Endocrinology and Infertility Fellowship

EDUCATION

We are home to one of the nation's most diverse training grounds. Our outstanding facilities and programs attract exceptional candidates, producing scientists and healthcare providers destined to make unprecedented gains in OB/GYN care and outcomes.



1ST

Matched first
Maternal-Fetal Medicine/
Genetics Fellow



1ST

Matched first OB/GYN
Hospitalist Fellow



10

Baylor medical students
matched to OB/GYN
residency programs

2019 FELLOWSHIP GRADUATES

Sara Arian, MD
Reproductive Endocrinology
and Infertility

Elise Bardawil, MD
Minimally Invasive
Gynecologic Surgery

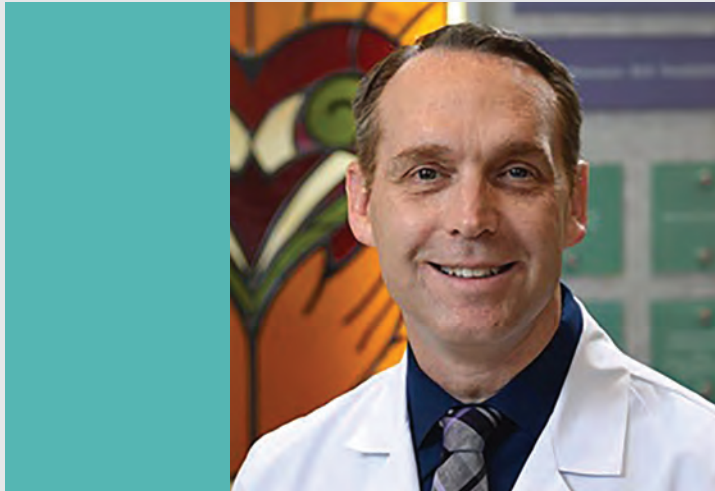
Maya Kriseman, MD
Reproductive Endocrinology
and Infertility

Robert Rydze, MD
Reproductive Endocrinology
and Infertility

Kathryn Stambough, MD
Pediatric and Adolescent
Gynecology


Mary Stokes, MD, MPH
Global Women's Health

Mary Tolcher, MD
Maternal-Fetal Medicine



Shad Deering, MD
Professor

 **300**
Providers trained

 **120**
Texas hospitals represented at training



SIMULATION TEAM IMPLEMENTS STATEWIDE TRAINING DRILLS FOR POSTPARTUM HEMORRHAGE

Dr. Shad Deering, retired Army colonel, professor of Obstetrics and Gynecology for Baylor, and System Medical Director of the CHRISTUS Simulation Institute, is reaching almost every Texas hospital as part of the *Practicing for Patients* training program.

The program is accessible online with manuals, training aides, leadership guides, implementation manuals and videos. But the in-person training course, that Baylor and AIM faculty facilitate, helps teams take it back into their own hospitals.

“We’re leading a train-the-trainer program to teach sites how to run simulation drills in their facilities to tackle postpartum hemorrhage,” Dr. Deering said. “It’s specifically aimed at addressing maternal morbidity and mortality, and we’re arriving at the perfect time.”

“We set it up through Texas AIM and offered five train-the-trainer courses to the 218 hospitals participating in AIM,” Dr. Deering said. “Texas AIM is purchasing simulators for all the hospitals, so not only are they learning from the bundles, but they’re getting hands-on practice and simulation drills.”

As of June 2020, the Joint Commission requires hospitals to do postpartum hemorrhage drills on their labor and delivery units. The Baylor simulation team is helping facilities meet those requirements ahead of time. The Alliance for Innovation and Maternal Care (AIM) developed training bundles on postpartum hemorrhage, and Dr. Deering, through his work with the ACOG Simulation Working Group, partnered with the Council on Patient Safety for Women & Mothers’ Health Care to create a simulation training program using the AIM bundles.

The simulation team’s work is well positioned for national reach.

“Baylor has a real opportunity to be a super trainer, while AIM can be a resource to other states,” Dr. Deering said. “In the future, I hope we will train other states’ leadership how to do this so they can implement it across the country.”

As training continues for postpartum hemorrhage, the team is also developing a hypertension simulation module with a planned release date this summer.

“Our vision was for any hospital in the country to take this program and go back to their institution and run these drills,” Dr. Deering said. “This training module was the result of multiple organizations working together, so that it encompasses everyone – doctors, nurses, anesthesia, pediatrics, family medicine and so on.”

“A second component of this summer’s Joint Commission requirements is a standard for hypertension/preeclampsia,” Dr. Deering said. “We’re developing guidelines and best practices to meet those needs too.”



RESEARCH

Backed by Baylor College of Medicine's renowned research infrastructure, we are continually enhancing the world's understanding of women's health, translating new knowledge into new treatments that save and transform lives.



Wesley Lee, MD
Professor
Director, Division of Women's
and Fetal Imaging

BAYLOR DOCTOR RECEIVES FEDERAL AWARD FOR IMPROVING DETECTION AND MONITORING OF SMALL FETUSES

Dr. Wesley Lee, professor in Baylor's department of Obstetrics and Gynecology and division director for Women's and Fetal Imaging, is a co-recipient of a five-year research award from the National Institutes of Health. Other collaborators include the University of Michigan and the Perinatology Research Branch of the Eunice Kennedy Shriver National Institute of Child Health and Human Development in conjunction with GE Healthcare.

Dr. Lee said, "We will first examine the reliability of the technique using ultrasound flow models and then study how reproducible these venous flow measurements are in pregnant women. Four hundred pregnancies will undergo serial ultrasound scans to develop normal reference standards for 3D UVF."

Using 3D UVF, conventional Doppler ultrasound data, 3D soft-tissue limb volume measurements and new fetal heart function technology, the team will also study approximately 1,100 small fetuses (with estimated weights of less than the 10th percentile). In addition to population-based reference standards, the team will also interpret longitudinal data using Individual Growth Assessment. This approach accounts for the growth potential of a single fetus in relation to its personalized third trimester growth trajectories. All of the prenatal information will be correlated with postnatal outcomes.

"This work could establish 3D UVF as an accurate and reproducible circulatory measurement that's clinically useful as early as the late first trimester," Dr. Lee said. "Our approach could improve detection and monitoring of small fetuses before conventional imaging predictors (for poor pregnancy outcomes) become apparent."

"With our research, we aim to improve the detection and monitoring of small fetuses using a new technology called 3D umbilical venous flow (3D UVF)," Dr. Lee said. "Our research team will use an advanced 4D electronic ultrasound transducer with power Doppler imaging to measure blood volume flow measurements in a way that's not possible with our existing conventional techniques."

Currently, fetal ultrasound measurements and Doppler velocity waveforms of the umbilical artery are used to evaluate smaller fetuses with estimated weight less than the 10th percentile. Unfortunately, measurements alone don't always distinguish between small fetuses at risk for poor outcomes from those that are genetically small but otherwise healthy. With the Growth Restriction by Anatomical and Cardiovascular Evaluation (GRACE) study, the research team hopes to develop improved methods for evaluating small fetuses.



19,037

Ultrasound scans at the Pavilion for Women and Community Maternal-Fetal Medicine clinics



347

Fetal MRI evaluations performed by Radiology at the Pavilion for Women



NIH-APPROVED FUNDING

CONSERVED FETAL EPIGENOMIC AND METAGENOMIC SIGNATURES IN A PRIMATE MODEL OF MATERNAL OBESITY

Kjersti Aagaard, MD, PhD

Professor

Obesity causes substantial social, economic, and health burdens. The rate of obesity is escalating disproportionately in children (infants to young adults). This rapid increase is unlikely to be due to environment or genetics alone. Based on previous work, we believe that obesity in part starts when the child was a fetus in utero and occurs because of reprogramming of gene expression caused by the mother's diet and health. We will test this hypothesis in non-human primates (because like humans they have single offspring and similar maternal and fetal metabolic demands) and will determine whether improving maternal diet changes genes of interest that contribute to childhood obesity. Given the obesity epidemic, this has great public health significance.

SOURCE AND SINK OF THE PLACENTAL MICROBIOTA

Kjersti Aagaard, MD, PhD

Professor

Knowing that the vast majority of spontaneous preterm births are classified as "idiopathic", we and others have undertaken population-based, cross-sectional approaches to initially identify which microbiota are associated with increased risk of preterm birth. Of importance to our overarching hypothesis and approach in this proposal, the absolute presence or absence of any single microorganism (or composite taxa) is not unique to cases of preterm birth. Rather, both abundant and scarce microbiota can be found in all subjects regardless of pregnancy status, as well as term and preterm delivery. Single-time point, cross-sectional case-control studies are thus unlikely to sufficiently differentiate association from causation. In order to attain at least causal inference, we will characterize the microbiome (alongside its metagenome, metatranscriptome and metabolome) employing a longitudinal, case-cohort design with bi- and tri-partite and Bayesian

analyses to meaningfully compare at-risk preterm and term deliveries.

In addition to discerning causation of preterm birth, we want to examine the impact of preterm birth on the offspring microbiome and immune development. Neonates/infants are a vulnerable population regarding infectious disease susceptibility, which is exemplified by the risk of preterm neonates to necrotizing enterocolitis. Furthermore, prior studies have independently shown associations between either neonatal immunity or the neonatal microbiome and necrotizing enterocolitis. While the importance of the association between neonatal immunity and the microbiome is recognized, the source, timing of colonization, and stability of the neonatal/infant microbiome is unclear. Thus, it is essential to understand interactions between neonatal/infant immunity and the developing microbiome. With our cohort proposed and approved for this study, we would like to extend our sampling throughout the first year of infant life to capture associations between the developing microbiome and immune system.

MEDICAL OPTIMIZATION & MANAGEMENT OF PREGNANCIES WITH OVERT TYPE 2 DIABETES (MOMPOD)

Kjersti Aagaard, MD, PhD

Professor

Over 100,000 pregnant women with overt type 2 diabetes mellitus (T2DM) give birth in the United States every year. Strict maternal glycemic control is the key to optimizing infant outcomes. Medical treatment of overt T2DM in pregnancy is generally restricted to insulin as data on the safety and efficacy of oral hypoglycemic agents for overt T2DM is limited. However, over one-third of infants born to women with overt T2DM experience an adverse outcome such as premature delivery, large-for-gestational age (LGA), hypoglycemia, hyperbilirubinemia, or birth trauma, suggesting that current treatment regimens fall short of optimizing outcomes. We believe that further research is needed to identify better strategies to reduce neonatal complications of overt T2DM in pregnancy. Metformin is the pharmacologic treatment of choice for overt T2DM outside of pregnancy. Metformin is favored over insulin because it results

in less weight gain, fewer hypoglycemic episodes, and is oral rather than injectable. Metformin's mechanism of action directly counteracts the insulin resistance characteristic of T2DM. Metformin is not recommended for treatment of T2DM complicating pregnancy, mainly because there are no large clinical studies examining its use in this context. Research is needed to address this knowledge gap. Our long-range goal is to optimize maternal and infant outcomes in overt T2DM complicating pregnancy. The objective of this proposal is to study the efficacy and safety of adjuvant metformin for treatment of T2DM among pregnant women receiving insulin therapy. Our central hypothesis is that compared to insulin alone, insulin plus metformin will result in improved neonatal outcomes.

INTERRUPTING THE VICIOUS CYCLE OF OBESITY AND METABOLIC SYNDROME

Kjersti Aagaard, MD, PhD
Professor

Our hypothesis is that maternal Western Style Diets (WSD) and/or maternal obesity is causing damage to the development of key metabolic systems (liver, muscle and pancreas) thereby altering tissue function at the cellular and molecular level in young offspring of obese mothers. Furthermore, the persistence of abnormalities in post-natal

animals switched to a healthy diet suggests that the developmental changes may have permanent epigenetic or molecular effects that alter metabolic outcomes, thereby linking early exposure to WSD to long term negative effects on other organs. Life-course studies in human infants born to obese mothers, particularly at the molecular and cellular level in tissues relevant to diabetes and obesity are completely lacking. Thus, the structural and biochemical/molecular changes in pancreas, liver, and skeletal muscle that take place just prior to puberty (3 years old in non-human primates) after exposure to obesity or WSD in utero may have direct effects on risk for obesity and type 2 diabetes, but almost nothing is known about these tissues in children. Given the important role of chromatin in regulating both dynamic and stable patterns of gene expression, early exposures to obesity and WSD are very likely associated with a reprogramming of patterns in gene expression that may mediate changes in metabolic risk due to critical nutritional exposures. Natural compounds that can be used safely in pregnancy to target specific pathways for disease risk are also few and far between. In order to halt the development of childhood obesity and its metabolic consequences it will be important to determine whether dietary intervention in early life can reverse the defects in chronic dysregulation that underlie persistent changes already observed in pathways in liver, muscle, and pancreas in a model similar to humans.

“Our hypothesis is that maternal Western Style Diets (WSD) and/or maternal obesity is causing damage to the development of key metabolic systems (liver, muscle and pancreas) thereby altering tissue function at the cellular and molecular level in young offspring of obese mothers.” - Kjersti Aagaard, MD, PhD

DES EXPOSED COHORTS - LONG-TERM FOLLOW-UP

Kjersti Aagaard, MD, PhD
Professor

Millions of pregnant women in the U.S. and Europe were given the potent estrogen diethylstilbestrol (DES) during pregnancy. In 1971, a strong association was identified between prenatal DES exposure and vaginal clear cell adenocarcinoma. Subsequently, animal models demonstrated a wide variety of other abnormalities with in utero DES exposure, including increases in reproductive cancers. The National Cancer Institute (NCI), in collaboration with five field centers assembled in the early 1990s, is following cohorts of DES exposed and unexposed mothers, daughters, sons, and more recently, granddaughters. We have linked this exposure to increased breast cancer risk in mothers, increased risk of 12 serious adverse outcomes, including three malignancies, in exposed daughters, and urogenital anomalies and possibly testicular cancer in sons. The DES combined cohort still offers the only large observational study with documented high dose in utero hormonal exposure. Continuation of follow-up will allow us to monitor the long-term risks of cancer and other adverse health outcomes. We now have the opportunity to follow the exposed daughters and sons as they enter the age of rising cancer rates, and the possibility of detecting transgenerational effects in granddaughters. The DES study continues to earn wide recognition as a uniquely valuable model for assessing prenatal hormonal influences on disease risk, an intriguing scientific question and a continuing environmental controversy.

IMPACT OF HURRICANE HARVEY ON THE MATERNAL AND INFANT MICROBIOME AND BIRTH OUTCOMES

Kjersti Aagaard, MD, PhD
Professor

Pregnancy and early life represent crucial windows of susceptibility to environmental exposures, for which epigenomic and metagenomic changes are likely key molecular mediators. We have recently shown in humans and non-human primates that the placental and offspring gut microbiome community and metagenomic function are significantly altered with maternal antenatal (during pregnancy) infection and by the maternal diet. However, the response of the maternal and infant microbiome to highly stressful and microbial laden natural disasters (such as flooding and large-scale population displacement such as recently occurred with Hurricane Harvey) has yet to be studied. Why study the built environment alongside the maternal and infant microbiome and metabolome in response to Hurricane Harvey? Although it is now established that both microbial laden and antimicrobial exposures render an altered microbiome community in animal models, it is less clear whether this occurs in vivo. Our overarching hypothesis is that during a natural disaster environmental exposures (via inhalation, absorption, and/or ingestion) to atypically encountered microbes (bacteria and fungi) and/or substances with antimicrobial properties will predictably alter the maternal and infant microbiomes. We will specifically test the hypothesis that exposures have a measurable effect only when an absent or dysbiotic/susceptible existing microbial community is present. We propose a series of innovative Aims whereby we will leverage 526 maternal-infant pairs from which maternal samples (placental, vaginal, oral, stool, skin, breastmilk, and nasopharyngeal) and infant specimens (stool, oral, nasopharyngeal, skin) have been collected throughout gestation (first trimester to 8 weeks postpartum) “pre-Harvey” and compare to those collected “post-Harvey.”





ROLE OF MATERNAL DIET IN REGULATING THE OFFSPRING GUT BRAIN AXIS IN PRIMATES

Kjersti Aagaard, MD, PhD
Professor

Over the last decade we have developed a non-human primate model of obesity, now in its 11th year, to study the root molecular causes rendering risk of aberrant offspring metabolic and behavioral health following maternal high fat diet exposure. Based on our published and preliminary data, our hypothesis is that fat in the maternal diet during gestation and lactation functionally alter the fetal/infant microbiome, resulting in highly predictable biologic signatures comprised of microbial produced low molecular weight compounds which drive offspring anxiety.

ANTIHYPERTENSIVE THERAPY FOR MILD CHRONIC HYPERTENSION DURING PREGNANCY - A PRAGMATIC MULTICENTER RANDOMIZED TRIAL (CHAP PROJECT)

Kjersti Aagaard, MD, PhD
Professor

During pregnancy, chronic hypertension (CHTN) is the most common major medical disorder encountered, occurring in 2-6%. The substantial negative effect of CHTN on pregnancy includes a consistent 3- to 5-fold increase in superimposed preeclampsia and adverse perinatal outcomes (fetal or neonatal death, preterm birth (PTB), small for gestational age (SGA) and placental abruption) and a 5- to 10-fold increase

in maternal cardiovascular and other complications (death, cerebrovascular accident, pulmonary edema and acute renal failure). Mild CHTN (BP <160/110) contributes to a large proportion of these adverse outcomes.

The purpose of this study is to evaluate whether a BP treatment strategy to achieve targets that are beneficial for non-pregnant adults (<140/90 mmHg) is safe and effective during pregnancy.

UTERINE WALL-MEMBRANE ANCHOR DEVICE FOR THE PREVENTION OF PRETERM PREMATURE RUPTURE OF THE MEMBRANES FOLLOWING FETOSCOPIC SURGERY

Jimmy Espinoza, MD, MSc
Associate Professor

Dr. Belfort and Dr. Espinoza will perform surgeries on pregnant rabbits to evaluate the safety and efficacy of a device designed to anchor the chorioamniotic membranes during fetal surgery. They will also provide input into design refinements of the chorioamniotic anchor device in order to make the device user-friendly. In addition, Dr. Belfort and Dr. Espinoza are gathering the literature and scientific evidence supporting the need for a device to anchor the chorioamniotic membranes during any type of in-utero surgical procedure.

HORMONES AND MECHANOTHERAPEUTICS: RESTORING ALTERED HYALURONAN BIOLOGY IN MUCOSAL WOUND HEALING USING VAGINAL TISSUE AS A MODEL

Julie Hakim, MD
Assistant Professor

Vaginal scar tissue is a debilitating occurrence, commonly associated with reconstructive surgery, trauma, or pelvic radiation for cancer, that can have life-long sequelae. Unfortunately, there are limited means of preventing or treating vaginal fibrosis due to the paucity of knowledge about how mucosal tissues, and vaginal tissues specifically, heal and respond to common clinical interventions such as dilation or hormone therapy. This project seeks to be the first to understand the mechanisms behind vaginal wound healing and will test our central hypothesis that biomechanical forces and hyaluronan impact estrogen's role in promoting mucosal homeostasis, which will generate a framework for the development of tailored anti-fibrotic therapies.

NEWLY DESIGNED PEDIATRIC VAGINAL STENTS: IMPROVING VAGINAL TISSUE HEALING FOR GIRLS AND WOMEN WITH CONGENITAL AND REPRODUCTIVE ANOMALIES

Julie Hakim, MD
Assistant Professor

There are many girls and women born with congenital gynecologic abnormalities requiring surgical reconstruction of their vaginal cavities. There are also women who have very shortened or scarred vaginas after pelvic surgery or radiation treatment for cancer. Vaginal stents can be used after neo-vagina creation to prevent scarring and re-stenosis. There are no currently available vaginal stents that meet the anatomic needs of pediatric and adolescent girls or women who are post treatment for gynecologic cancers. As such, there is a high rate of post surgical complications such as vaginal tissue scarring and vaginal stenosis. We propose to create new vaginal stents with

improved fit and comfort for a pediatric population and for those women with shortened vaginas. We believe this new vaginal stent will reduce post surgical morbidity, early discontinuation of stent use postoperatively, reduce health care costs and improve clinical outcomes for girls and women across North America.

3D UMBILICAL VENOUS BLOOD FLOW - A NEW PARADIGM FOR IMPROVING THE ASSESSMENT OF FETAL GROWTH RESTRICTION

Wesley Lee, MD
Professor

The delivery of a small for gestational age baby impacts families and health care systems alike although distinguishing those that are born constitutionally small from those that experienced intrauterine undernourishment, as a result of poor placental function and uniquely at risk for adverse outcomes, is a crucial challenge. We have developed a new approach for measuring umbilical venous blood flow using 3D ultrasound and Doppler technology across all trimesters of pregnancy. In this proposal, we explain how we will determine accuracy, reproducibility, normal reference standards, and circulatory findings in small fetuses, based on 3D umbilical venous blood flow, to improve our ability for detecting and monitoring pregnancies with suspected growth abnormalities from intrauterine undernourishment.

"We have developed a new approach for measuring umbilical venous blood flow using 3D ultrasound and Doppler technology across all trimesters of pregnancy."

- Wesley Lee, MD

A PHASE 2 CLINICAL STUDY OF THE MATERNA DEVICE TO SHORTEN DELIVERY TIME DURING CHILDBIRTH

Francisco Orejuela, MD

Associate Professor

Over 80% of women who deliver vaginally will sustain a vaginal tear, and roughly half of all women will suffer from permanent pelvic muscle damage that may lead to pelvic disorders later in life. The consequences of vaginal tearing are acute and chronic pain, longer recovery times, sexual dysfunction and permanent disfigurement. Additionally, women often say that the prospect of tearing is one of the things they fear most regarding childbirth. Tearing during childbirth is well documented as occurring during most deliveries, however there is additional damage now being discovered that occurs internally to the pelvic muscles.

Vaginal delivery is the biggest predictor for developing pelvic floor disorders. The pelvic muscle damage that occurs during vaginal delivery is consistent with the etiology of many women who seek treatment for prolapse and incontinence, and does not occur in women who have never delivered or have delivered via cesarean section.

The Materna device aims to prevent pelvic tissue damage by preventing overstretching of pelvic floor muscle fibers during delivery. The device is a single use, disposable, mechanical dilator that penetrates the first 4 cm of the vaginal canal and gradually expands the vagina from a resting diameter of 2-3 cm to the fully expanded size of a delivering fetus, roughly 8-10 cm. The Materna device will be used during the first stage of labor, for roughly 1-2 hours, in a hospital Labor and Delivery unit, under the supervision of trained clinical labor and delivery providers. Expansion will be controlled by a semi-automatic force controlled actuation system, and the device can be quickly and easily removed at any time. Expansion will be completed at 8-10 cm, and the device will be removed before the second phase of labor begins so delivery proceeds unobstructed.

THE ROLE OF PANCREATIC VASCULATURE IN THE DEVELOPMENT OF GESTATIONAL DIABETES AND ASSOCIATED LONG-TERM MATERNAL HEALTH RISKS

Kathleen Pennington, PhD

Assistant Professor

Gestational Diabetes Mellitus (GDM) is one of the most common obstetrical complications and has long-term deleterious health effects on mother and baby. The mechanisms regulating GDM and the long-term maternal health effects are poorly understood and good animal models are necessary to study these health risks. Work in this proposal further validates our unique animal model to study the patho-physiology of GDM. Furthermore this proposal works to characterize the potential and novel role impaired pancreatic vasculature plays in the manifestation of GDM.

CHANGES IN PLACENTAL THYROID HORMONE TRANSPORT ASSOCIATED WITH MATERNAL OBESITY

Melissa Suter, PhD

Assistant Professor

Obesity during pregnancy bears unique risks to both the mother and the fetus, including fetal overgrowth, obstetrical complications, and an increased risk of adult metabolic disease for the exposed fetus. While the molecular mechanisms behind this fetal overgrowth remain unclear, our data indicates thyroid hormones as likely molecular mediators. The research outlined in this proposal aims to study thyroid hormone specific changes in the placenta associated with maternal obesity in order to increase our understanding of the adverse effects of prenatal exposure to maternal over nutrition.

SEX STEROID HORMONES AND CALCITONIN GENE-RELATED PEPTIDE

Chandrasekhar Yallampalli, DVM, PhD

Professor

Pregnancy is associated with vascular adaptations involving vasodilation of the systemic vasculature and increased uterine artery blood flow. We and others reported that calcitonin gene-related peptide (CGRP) family peptides, CGRP and adrenomedullin (ADM), represents a novel second line of defense for regulating these pregnancy-induced vascular adaptations. In hypertensive pregnancy disorders such as pre-eclampsia(PE) these vascular adaptations are inadequate perhaps due to the elevated levels of soluble fms-like tyrosine kinase (sFLT-1), increased angiotensin2 (ATII) sensitivity and vascular dysfunction involving nitric oxide system. Although our previous studies demonstrated the role of these peptides in a rat model, it is not known if this critically important peptide-receptor system is upregulated in maternal vasculature during normal pregnancy in women and whether failure of its pregnancy-related upregulation has clinical relevance in causing PE-associated vascular dysfunction, and whether this system could be targeted to reverse PE-associated vascular dysfunction. Four specific aims are proposed using human tissues and sFLT-1 overexpression induced mouse model of PE to test the central hypothesis that an intact and functional CGRP and ADM system during pregnancy would reduce the chances of developing the symptoms of preeclampsia.

MECHANISMS FOR SEX DIFFERENCES IN METABOLIC PROGRAMMING

Chandrasekhar Yallampalli, DVM, PhD

Professor

Increased susceptibility to metabolic diseases including diabetes and hypertension during adult life has been recognized for offspring born to

mothers with nutritional stress during pregnancy. We recently developed a unique gestational low-protein (LP) rat model in which the offspring are not obese but have glucose intolerance (GI) and insulin resistance (IR), and are unable to regulate glucose production, similar to that seen in humans who are metabolically aberrant with normal weight. Based on our recent exciting resultant observations with metabolic syndrome, we are focusing on the role of sex steroid hormones (testosterone (T) and estradiol (E2)) in regulating the onset and progression of GI and IR in the offspring exposed in utero to LP diet, and mechanisms involved. The central hypothesis is that the offspring from maternal LP- programming are GI and IR and their onset and progression are sex- and sex steroid (T in males and E2 in females)-dependent, and involve regulatory mechanisms of glucose homeostasis, insulin signaling, and mitochondrial function.

ADRENOMEDULLIN, DIABETES AND PREGNANCY

Chandrasekhar Yallampalli, DVM, PhD

Professor

Gestational diabetes mellitus (GDM), one of the most common complications of pregnancy affecting about 18% of all pregnancies. GDM is associated with maternal adipose tissue (AT) dysfunction, with increased lipolysis and abnormal production of adipokines, which adversely affects the quality and quantity of lipids transferred to the fetus and its growth. Based on novel findings from our preliminary data, we hypothesize that adrenomedullin (AM) has an important role in lipid metabolism during pregnancy and that high glucose- / TNF- α -induced elevations in the expression and function of AM system increases lipolysis and suppresses lipogenesis in AT contributing to the reported overt dyslipidemia in GDM. We will also assess if these changes are fetal sex dependent, and fat depot specific by measuring changes in omental AT (OAT) and subcutaneous AT (SAT).

CHARACTERIZATION OF THE ROLE OF MATERNAL EFFECT GENE NLRP2 IN REPRODUCTION

Ignatia Van Den Veyver, MD

Professor

Maternal mutations in human NLRP7 cause pregnancies recurrent hydatidiform molar pregnancies with imprinting defects. Maternal mutations in its highly homologous neighboring gene NLRP2, cause a multi-locus imprinting disorder (MLID) that manifests as Beckwith-Wiedemann syndrome in offspring. Both are associated with abnormal DNA methylation of maternally imprinted genes. Rodents have the *Nlrp2* gene, but no *Nlrp7*. We hypothesized that *Nlrp2* may combine functions of both human homologs and generated a *Nlrp2*-mutant mouse model to study the mechanisms by which its maternal inactivation causes the observed offspring and placental abnormalities. We found that NLRP2 protein is a new member of the subcortical maternal complex (SCMC), a cytoplasmic complex in oocytes that persists in preimplantation embryos with a presumed role in maternal-to-zygote transition and zygotic genome activation, which are the processes by which embryos switch from reliance on maternally contributed transcripts and proteins to their own transcription and translation. We found that a maternal-effect mutation in *Nlrp2* disrupts the SCMC, causing *Nlrp2*-null females to produce fewer and smaller litters with offspring that have birth defects, growth abnormalities, and imprinting defects. In vitro cultured embryos of these *Nlrp2*-null females have a more severe phenotype with early cleavage-stage arrest. These data for the first time link the SCMC to imprinting reprogramming and indicate that *Nlrp2*-null mice are an excellent model to study the mechanisms of this interaction. They support the overarching goal of this project, to characterize how maternal loss of NLRP2, a new SCMC protein, alters imprinting in offspring, and how this leads to a range of reproductive phenotypes.

PRENATAL GENETICS DIAGNOSIS BY GENOMIC SEQUENCING: A PROSPECTIVE EVALUATION

Ignatia Van Den Veyver, MD

Professor

This study aims to determine in an unselected population of pregnancies with fetal anomalies, negative karyotype and CMA the frequency of pathogenic and likely pathogenic genomic variants identifiable by whole genome sequencing (WGS) and whole exome sequencing (WES). In fetuses with a structural anomaly, we will perform a prospective cohort study comparing acute care management (including health care utilization and costs) of pregnancies and neonates which have undergone prenatal whole genome sequencing compared to un-sampled pregnancies. We will expand and adapt the diagnostic utility and interpretative value of fetal genomic sequence data. Informed by our pilot data and ongoing experience, we will develop and optimize appropriate bioinformatic tools that identify pathogenic mutations suggestive of novel or early phenotypes for known disease genes and which are capable of discovering novel genes responsible for unexplained fetal/neonatal phenotypes. We will also evaluate the educational, counseling, and psychosocial needs and the implications of prenatal whole genome sequencing based on patient and practitioner knowledge, attitudes, and experiences.

TRAINING PROGRAM IN TRANSLATIONAL BIOLOGY AND MOLECULAR MEDICINE (TBMM)

Ignatia Van Den Veyver, MD

Professor

The major goal of the TBMM Training Program is to utilize an innovative curriculum and unique dual mentorship by a basic science mentor and a clinical mentor to train a new cadre of biomedical scientists to work at the interface of basic and clinical research to meet the national need for more translational researchers. To train PhD scientists who can more effectively exploit the findings of basic biomedical research to improve human health.

THE ROLE OF NLRP7 AND KHDC3L IN GERMLINE IMPRINTING AND EMBRYONIC REPROGRAMMING

Ignatia Van Den Veyver, MD

Professor

Maternal effect mutations of NLRP7 or KHDC3L, two genes that are not present in rodents, cause recurrent biparentally inherited molar pregnancies (BiHM) with characteristic absent DNA methylation at imprinted germline differentially-methylated regions (gDMRs) that normally gain methylation in oocytes. This indicates that NLRP7 and KHDC3L are required for the determination of which gDMRs need to have their imprinting marks reprogrammed in the developing oocyte, and/or for the reprogramming process itself. These fundamental aspects of genomic imprinting are still poorly understood, especially in humans and other primates. Because rodents do not have NLRP7 and KHDC3L genes, precluding generation of mouse models, we established a human embryonic stem cell (hESC) model, using the H9 (WA09) line (NIH reg. 0062) to study their function. We discovered that stable NLRP7 knockdown in hESCs changed DNA methylation levels at many CpG sites and augmented BMP4-induced differentiation of hESCs into trophoblast. We also found that NLRP7 binds to KHDC3L, YY1, CTCF and the CpG-binding protein CFP1. Preliminary gene-expression and DNA methylation profiling data in hESC indicate that NLRP7 levels influence expression and methylation of a subset of genes that include epigenetic regulators with known or putative roles in imprinting. Furthermore, NLRP7 and KHDC3L are upregulated in dividing cells where they co-dependently localize to the mitotic spindle, an intriguing discovery considering that reprogramming of imprinting occurs during meiosis, a form of cell division, and needs to be maintained through mitotic cell divisions. These new findings led us to formulate our hypothesis, that NLRP7 and KHDC3L directly and cooperatively act in establishment or maintenance of imprinting marks at maternal gDMRs and that they are critical for recognition of a defined set of gDMRs that need to acquire DNA methylation or maintain it post-fertilization.





COMMUNITY

We go where the OB/GYN needs are greatest. From underserved populations in nearby neighborhoods to underdeveloped nations across the globe, we are bringing life-changing healthcare and hope where it is needed most.



Erica Giwa, MD
Assistant Professor
Medical Director, The Center for
Children and Women



31,273

Total number of appointments



1,524

Total number of women screened for postpartum depression



8,312

Total number of Maternal-Fetal Medicine appointments (including ultrasound and consultation)



909

Total number of women enrolled in Centering Pregnancy®



1,714

Total number of women seen in Healthy Texas Women program

EXPANDED OFFERINGS AT THE CENTER FOR CHILDREN AND WOMEN HELP IMPROVE PATIENT OUTCOMES

The Center for Children and Women has been meeting its objective—to provide a one-stop-shop for patients—for more than six years, so 2019 was focused on delivering new ways to impact the community.

“We started looking at the root cause of why some patients were not compliant with the recommended care,” said Dr. Erica Giwa, medical director for The Center and assistant professor in Baylor’s department of Obstetrics and Gynecology. “More often than not, our patients are facing other obstacles that impede them from benefitting from medical care.”

Access to healthy, fresh, affordable food was an issue for many patients. Using a newly launched food prescription program, a food insecurity screening process and a mobile food pantry, The Center now helps patients get quality, nutritious food to make a healthy impact.

“These programs give our patients access to a balanced diet that our dietitians recommend,” Dr. Giwa said. “I’m hoping this particular benefit also helps enrollment for other Center services, like an incentive to make positive choices when it comes to medical care.”

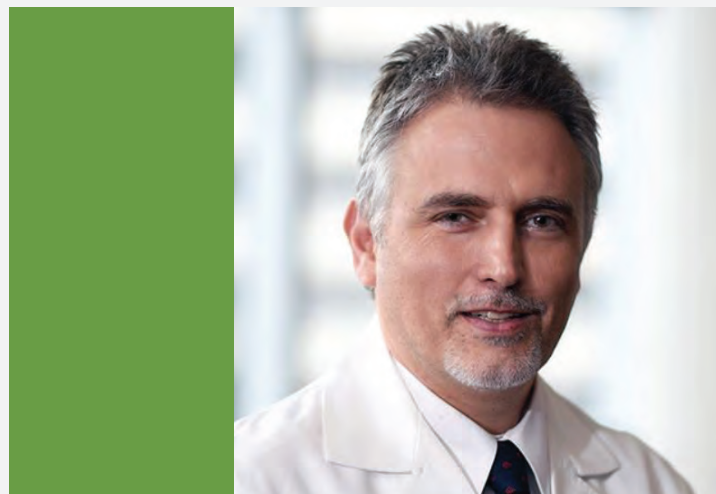
The Healthy Start Initiative also kicked off in 2019. It’s a grant aimed at reducing infant and maternal mortality in 10 Harris County ZIP codes (the Center’s two locations are in those areas). The program uses community health workers to educate women about prenatal, conception and postpartum care.

“What I’m really excited about with this program is the in-home curriculum component,” Dr. Giwa said. “If we have a diabetic patient who isn’t understanding the importance of compliance or who is having difficulty, we can assign a community health worker to visit her home for the remainder of her pregnancy and even up to 18 months postpartum.”

The postpartum factor was a big plus for Dr. Giwa because the statistics show that maternal mortality often occurs 42-days postpartum and beyond.

“Having a health worker in the home for so long after delivery can help us recognize a potentially dangerous situation for mom and baby, and we can intervene,” Dr. Giwa said.

The dads have not been left out of the mix at The Center. The final component of the new 2019 programs is directed at education for fathers or other male caregivers that interact with the baby.



Jeffrey Wilkinson, MD
Associate Professor
Vice Chair of Global Women's Health

OVERSEAS RESIDENCY PROGRAM PROVIDES FIRSTHAND GLOBAL HEALTH EXPERIENCE

 **6,000+**
Deliveries at the Area 25 Hospital under public-private partnership with Malawi Ministry of Health

 **2**
Additional Malawian physicians added to Global Women's Health faculty

 **400+**
Fistula surgeries at the Fistula Care Center

 **1**
New partnership with the Malawi University of Science and Technology

 **9**
Scientific publications from the Fistula Care Center

The Global Health Residency Track is a unique opportunity through Baylor's Global Women's Health program for residents to gain significant time overseas, specifically in Malawi, working with patients daily.

"Working globally, especially in low resource settings, is a very fulfilling way to spend your career," said Dr. Jeffrey Wilkinson, associate professor in Baylor's department of Obstetrics and Gynecology and vice chair of Global Women's Health. "Residents training in Malawi can have a real impact on patients' lives."

The program allows residents to spend one month in their first year, two months in their second year and three months in their third year working as global health doctors.

"They will see all aspects of patient care in this setting," Dr. Abida Hasan, the Global Health Residency Program Track director remarked. "They'll care for women with conditions virtually never seen in the United States including obstetric fistula, tropical diseases, and complications that can arise from a lack of resources."

The program is set up in three different hospitals in Malawi with Malawian and American physicians participating in the training.

"In the U.S., the ratio of ob-gyns to women is very high," Dr. Hasan said. "Here, you have an opportunity to educate local physicians, learn about surgical and medical diseases that you would only see in this setting, and help to lower maternal and fetal mortality rates in Malawi."

The program is part of a public-private partnership with the Malawi Ministry of Health and benefits from a full-time cadre of both Malawian and foreign-trained faculty. In the last five years, at the Area 25 Hospital in Lilongwe, the number of deliveries has grown from 1,800 a year to a projected 7,000 in 2020.

"We have a new operating theater complex that opened a year ago, and we've done more than 1,300 procedures there already," said Dr. Wilkinson. "Our numbers are growing every week, and I'm very excited about that."

The expansion of the facility, the growth of the program and the public-private partnership with the Malawi Ministry of Health has helped bring high-quality medical care to a large population of people that have normally faced a setting with minimal resources.



HEALTHCARE

We are improving the health and well-being of women at every stage of life, from preconception to menopause, through the highest-quality, comprehensive OB/GYN care and expertise across a full range of subspecialties.

WHERE WE PRACTICE

You'll find our physicians treating patients in a wide range of healthcare settings throughout the Texas Medical Center, the greater Houston area, and beyond, from private hospitals to inner-city clinics to specialized centers in suburban communities. Through these diverse practice locations, we are improving access to the highest-quality OB/GYN care, encountering and treating an incomparable range of women's health issues, and gaining invaluable knowledge to improve the lives of women worldwide.



TEXAS CHILDREN'S PAVILION FOR WOMEN

This landmark facility is home to our primary private practice, where we're meeting the OB/GYN needs of women across their lifespan, from preconception through menopause. We are providing sought-after specialized services to a record number of patients, including nationally recognized fetal intervention and maternal care for high-risk pregnancies, pelvic floor and urogynecologic surgical procedures, and robotic gynecologic surgery.

BEN TAUB HOSPITAL

Through this highly acclaimed Harris Health System institution, our physicians are providing comprehensive OB/GYN care to thousands of underserved women in the nation's third most populous county, and improving birth outcomes for healthier generations to come.

TEXAS CHILDREN'S HOSPITAL

Within one of the nation's largest pediatric hospitals, you'll find our fellowship-trained pediatric and adolescent gynecologists providing expert medical and surgical care to improve the lives of young girls with gynecologic conditions, including rare congenital anomalies of the female reproductive system. We offer the only established program in Texas for the surgical treatment of pediatric and adolescent gynecologic disorders.

BAYLOR ST. LUKE'S MEDICAL CENTER

Our gynecologic surgeons at Baylor St. Luke's Medical Center are offering women more options than ever before for the surgical treatment of gynecologic conditions, including the latest advancements in minimally invasive procedures for shorter hospital stays and faster recovery.

HOUSTON METHODIST HOSPITAL

Through the onsite Maternal-Fetal Medicine Clinic, we're providing OB/GYN patients at this leading Houston hospital direct access to our renowned, specialized care for high-risk pregnancies, a collaborative effort that is improving maternal and fetal outcomes.

MICHAEL E. DEBAKEY VETERANS AFFAIRS (VA) MEDICAL CENTER

Our affiliation with one of the largest VA hospitals in the nation enables us to proudly serve the healthcare needs of female veterans in Harris County and 27 surrounding counties. We're honoring the contributions and sacrifices these women made in service to their country by providing the highest-quality women's healthcare available today, from primary OB/GYN care to a wide range of specialized services.

THE CENTER FOR CHILDREN AND WOMEN

Through this innovative, collaborative effort with Texas Children's Health Plan, we're addressing the needs of communities with large populations of children and pregnant women and high rates of preterm births.

TEXAS CHILDREN'S MATERNAL-FETAL MEDICINE AND OB/GYN CLINICS

Offices in The Woodlands, Northwest Houston, West Houston, Sugar Land, Pearland, and Baytown extend our leading-edge OB/GYN care out into the communities, making it easier for women to stay on top of their healthcare needs.

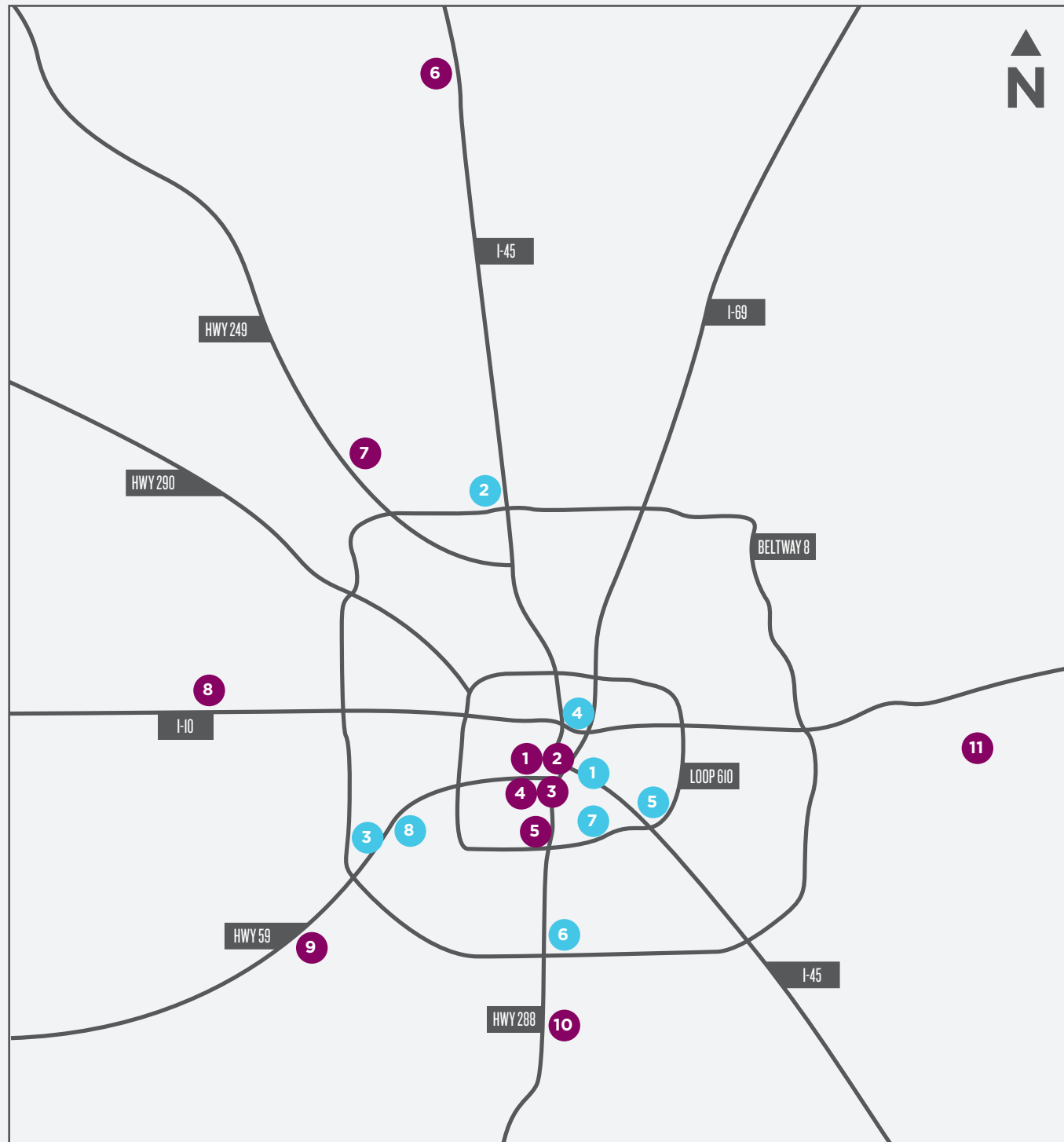
HARRIS HEALTH SYSTEM COMMUNITY CLINICS

We're improving access to prenatal care, family planning, and other outpatient services through Harris Health System clinics throughout the Houston area, including Casa de Amigos Health Center, Gulfgate Health Center, Martin Luther King Jr. Health Center, Smith Clinic, and Vallbona Health Center.

CHILDREN'S HOSPITAL OF SAN ANTONIO - CHRISTUS HEALTH

At this recently transformed world-class children's hospital, you will find our Maternal-Fetal Medicine specialists working alongside our genetics and pediatric specialists to provide maternal care for women with high-risk pregnancies in San Antonio and the surrounding communities.

OUR HOUSTON-AREA PRACTICE LOCATIONS



PRIVATE PRACTICE LOCATIONS

- 1 TEXAS CHILDREN'S PAVILION FOR WOMEN**
6651 Main Street
Houston, TX 77030
- 2 TEXAS CHILDREN'S HOSPITAL**
6621 Fannin Street
Houston, TX 77030
- 3 BAYLOR ST. LUKE'S MEDICAL CENTER**
6720 Bertner Avenue
Houston, TX 77030
- 4 HOUSTON METHODIST HOSPITAL**
6550 Fannin Street
Houston, TX 77030
- 5 MICHAEL E. DEBAKEY VA MEDICAL CENTER**
2002 Holcombe Boulevard
Houston, TX 77030
- 6 CHI ST. LUKE'S HEALTH - THE WOODLANDS HOSPITAL**
17350 St. Luke's Way
Medical Arts II, Ste. 300
The Woodlands, TX 77384
- 7 HOUSTON METHODIST WILLOWBROOK HOSPITAL**
13215 Dotson Road, Ste. 360
Houston, TX 77070
- 8 HOUSTON METHODIST WEST HOSPITAL**
18400 Katy Freeway, Ste. 540
Houston, TX 77094
- 9 METHODIST SUGAR LAND HOSPITAL**
Medical Office Building 3
16605 Southwest Freeway,
Ste. 500
Sugar Land, TX 77479
- 10 PEARLAND**
9003 Broadway Street
Pearland, TX 77584
- 11 BAYTOWN - TELEMEDICINE**
2610 North Alexander Drive,
Ste. 208
Baytown, TX 77520

PUBLIC PRACTICE LOCATIONS

- 1 BEN TAUB HOSPITAL**
1504 Taub Loop
Houston, TX 77030
- 2 TEXAS CHILDREN'S HEALTH PLAN - THE CENTER FOR CHILDREN AND WOMEN AT GREENSPPOINT**
700 North Sam Houston Pkwy. W.
Houston, TX 77067
- 3 TEXAS CHILDREN'S HEALTH PLAN - THE CENTER FOR CHILDREN AND WOMEN - SOUTHWEST HOUSTON**
9700 Bissonnet Street
Houston, TX 77036
- 4 CASA DE AMIGOS HEALTH CENTER**
1615 North Main Street
Houston, TX 77009
- 5 GULFGATE HEALTH CENTER**
7550 Office City Drive
Houston, TX 77012
- 6 MARTIN LUTHER KING JR. HEALTH CENTER**
3550 Swingle Road
Houston, TX 77047
- 7 SMITH CLINIC**
2525-A Holly Hall
Houston, TX 77054
- 8 VALLBONA HEALTH CENTER**
6630 DeMoss Street
Houston, TX 77074



Elisha Jackson, MD
Assistant Professor



974

Patient visits



460

Unique patients

NEW STAFF BRINGS NEW EXPERIENCE, NEW OPPORTUNITIES FOR PATIENTS

Dr. Elisha Jackson is assistant professor in Baylor's division of Female Pelvic Medicine and Reconstructive Surgery (Urogynecology). She is the newest addition to the department (joined in August 2019) and is well-seasoned in robotic and laparoscopic surgeries. Dr. Jackson is providing patients with individualized options to address their specific needs.

"I really like meeting patients where they are and treating them based on their goals," Dr. Jackson said. "Every therapy is not for every person, so having lots of options available in your arsenal is a huge asset when you're counseling patients about procedures and outcomes."

Dr. Jackson's extensive training allows Baylor to provide patients with overactive bladder other options in addition to Botox. Dr. Jackson can offer patients Sacral Neuromodulation, or InterStim[®] therapy, which has proven to be more effective than oral medications. Thanks to Dr. Jackson, a therapy called posterior tibial nerve stimulation is also available. This is a weekly office procedure to help with urinary urgency, frequency, and incontinence.

Dr. Jackson's main robotic procedure, a sacrocolpopexy, is performed at the Pavilion for Women to repair pelvic organ prolapse.

"We also offer native tissue prolapse surgery, vaginally or laparoscopically, based on what's best for the patient," Dr. Jackson said.

Within the next five years, Dr. Jackson would like to help start a fellowship in Female Pelvic Medicine and Reconstructive Surgery at Baylor College of Medicine.

"I have a personal interest in becoming a fellowship director because I was greatly impacted by the people who had a major role in my training," Dr. Jackson said. "I have a passion for training young doctors."

Dr. Jackson also has great interest in educating other providers, since Urogynecology is a newer specialty. She gives lectures in the community to help educate providers about female pelvic floor disorders and what management/treatment options are available.

"We have a lot to offer in terms of conservative and advanced treatments. Our clinics are very busy, and with access to Harris Health - Ben Taub Hospital our residents are receiving great training in how to manage and treat patients with a variety of pelvic floor disorders," Dr. Jackson said.



Alireza Shamshirsaz, MD

Associate Professor

Director, Division of Fetal Therapy and Surgery



1ST

Fetoscopic neural tube defect repair in Africa



1ST

Fetoscopic neural tube defect repair in the Middle East



1ST

Fetoscopic neural tube defect repair in Argentina

BAYLOR PERFORMED MANY FIRSTS FOR FETAL INTERVENTION IN COUNTRIES ABROAD

Performing repairs for neural tube defects (NTD) isn't considered a common surgery, but the number of procedures in the U.S. is definitely higher than in other countries. In fact, Texas Children's Hospital celebrated its 100th NTD repair in 2019 with Baylor doctors performing the surgery and teaching other surgical teams around the globe.

This same team of doctors traveled internationally to perform fetoscopic neural tube defect repairs in three different countries last year.

"In February, our team traveled to the Sheba Medical Center in Tel-Aviv to perform the first fetoscopic neural tube defect repair in the entire Middle East," said Dr. Alireza Shamshirsaz, associate professor and director of Baylor's division of Fetal Therapy and Surgery. "We still keep in touch with the perinatologists that worked alongside us, with the hope of continuing to work with them."

In June, the team went to South Africa to perform another repair, and this time it was the first in the entire continent.

"It's pretty incredible to have so many firsts and be able to make a difference for these patients,"

Dr. Shamshirsaz said. "We worked with some amazing perinatologists from Johannesburg."

The team from Johannesburg recently visited the U.S. to train with the Baylor team, so they can begin performing these surgeries in South Africa.

"They worked with us for about a week, and we trained them using simulation," Dr. Shamshirsaz said. "It's very rewarding to create a ripple effect that will help so many other patients."

The team's last stop on their travels abroad was in Buenos Aires. In September, they performed another fetoscopic neural tube defect repair, which was the first in Argentina.

"These patients are doing well, and we're seeing very good outcomes from these surgeries," said Dr. Shamshirsaz.

According to Dr. Shamshirsaz, the technique of fetoscopic NTD repair originated with this specific team of doctors, since other physicians are known to perform a cutaneous repair of NTD.

TEXAS CHILDREN'S FETAL CENTER®

2019 BY THE NUMBERS

OVERALL TOTALS

	2019
Fetal Echocardiograms	2,353
Evaluated Cases	900
Anomaly Evaluated Cases	747
Fetal Intervention Evaluated Cases	153
Fetal Center Deliveries at the Pavilion for Women (PFW)	481
Fetal Intervention and Surgeries	124

FETAL CENTER REFERRALS

	2019
Abdominal Wall Defects	27
Amniotic Bands	8
Congenital Diaphragmatic Hernia (CDH)	44
Fetal Tumors	5
Lung Lesions	26
Lower Urinary Tract Obstruction (LUTO)	28
Neck Mass	7
Neural Tube Defects (NTD)	102
Pleural Effusion	6
Twin Reversed Arterial Perfusion (TRAP) Sequence	7
Twin-Twin Transfusion Syndrome (TTTS)	94

FETAL INTERVENTION PROCEDURES

	2019
Bipolar Coagulation (BPC)	1
Intrauterine Transfusion (IUT)	17
Laser	59
LUTO	6
Pleural Effusion Shunt	4
Radio Frequency Ablation (RFA)	4
Amniotic Band	1
Other	1

FETAL SURGERY

	2019
Fetal Endoscopic Tracheal Occlusion (FETO)	3
Fetoscopic NTD Repair	17
Open NTD Repair	0
Open Resection of Teratoma	0
Cardiac Intervention	7
Ex-utero Intrapartum Treatment (EXIT)	5



Mark Turrentine, MD
Professor

PRACTICE BULLETIN ON PREGNANCY AND HEART DISEASE PROVIDES KEY TAKEAWAYS FOR PHYSICIANS ACROSS THE COUNTRY

Dr. Mark Turrentine, professor in Baylor's division of Gynecologic and Obstetric Specialists in the department of Obstetrics and Gynecology, chaired the Committee on Practice Bulletins - Obstetrics for the American College of Obstetricians and Gynecologists (ACOG). He was part of a 28-person ACOG presidential task force committee commissioned with developing a Practice Bulletin on cardiovascular disease in pregnancy.

"A little over one in four (26%) pregnancy deaths in the US is related to cardiovascular disease," Dr. Turrentine said. "It was important for us to establish national standards to address this serious condition."

The group was made up of specialists from obstetrics and gynecology and subspecialists including maternal-fetal medicine (MFM), cardiology, anesthesiology, primary care physicians

and others involved with cardiovascular disease in pregnancy. With the goal to reduce maternal mortality, the team narrowed in on women with congenital heart disease as well as women who developed acquired cardiovascular disease (e.g., myocardial infarction or cardiomyopathy).

"The typical Practice Bulletin includes background, clinical considerations/recommendations and six to ten key questions that a practitioner will probably have when seeing one of these patients," Dr. Turrentine said.

Four major risk factors are identified in the bulletin:

- 1) Race and ethnicity (Non-Hispanic Black women are at higher risk)
- 2) Age (Older than 40 years of age)
- 3) Hypertension (10% of pregnancies have some hypertensive disorder)
- 4) Obesity (60% of maternal deaths were women who were overweight or obese)

It also includes a color-coded table to differentiate the signs and symptoms of a normal pregnancy versus an abnormal one (with potential underlying cardiac disease). Green is reassuring, yellow is caution and red is stop (and do a prompt evaluation).

"A key takeaway is the Pregnancy Heart Team," Dr. Turrentine said. "Institutions need to establish a core group of individuals designated for these types of patients. At a minimum, it should be comprised of specialists or subspecialists in obstetrics, family practice/internal medicine, cardiology, MFM and anesthesiology. The Pavilion for Women's MFM-cardiology clinic is a good example."

The team also developed an advocacy component to support payment models for women using government-sponsored insurance.

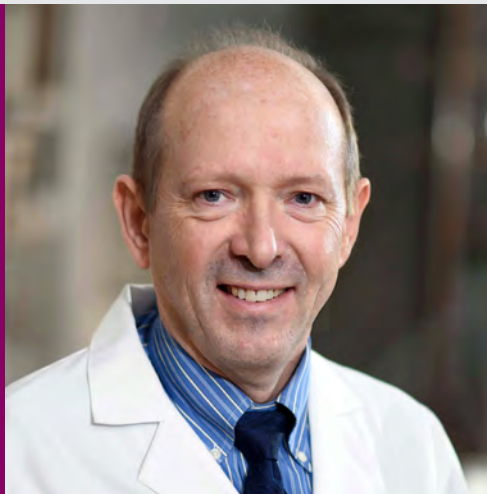
"Many of these benefits discontinue six-weeks postpartum," Dr. Turrentine said. "They're left with a serious health condition and should be seen three months out."

After serving three years as the committee chair, Dr. Turrentine's tenure finished in May 2020.

"It's been a lot of fun, and I've worked with incredible people," he said. "I'm grateful to Dr. Lisa Hollier for this experience." Lisa Hollier, MD, MPH, is past president of ACOG, Chief Medical Officer of Obstetrics and Gynecology for Texas Children's Health Plan, and professor of Maternal-Fetal Medicine at Baylor.

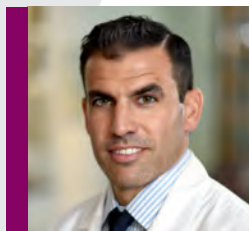
Dr. Turrentine plans to join the ACOG's Committee on Obstetric Practice team in the fall.

"A little over one in four (26%) pregnancy deaths in the U.S. is related to cardiovascular disease. It was important for us to establish national standards to address this serious condition." - Mark Turrentine, MD



Jan Sunde, MD
Associate Professor
Director, Division of
Gynecologic Oncology

Faculty in the Division of Gynecologic Oncology



Anthony Costales, MD
Assistant Professor



Tracilyn Hall, MD
Assistant Professor



Claire Hoppenot, MD
Assistant Professor

NEW FACULTY AND NEW PRACTICING SITE STRENGTHEN COLLABORATIVE CAPABILITIES FOR GYNECOLOGIC ONCOLOGY

In 2019 Baylor's gynecologic oncology team joined Baylor's other oncology practices at Baylor's McNair campus with the Dan L. Duncan Comprehensive Cancer Center. This move gave the team more resources to help their patients, including access to the new onsite infusion center, and genetic counseling resources in clinic.

"Some cancer genes overlap, so we see our clinic as a place where patients can have annual screenings with multiple providers to deliver a more comprehensive cancer screening process based on a patient's genetic risk," said Dr. Jan Sunde, Gynecologic Oncology division director and associate professor of Obstetrics and Gynecology. "Having other surgeons, such as the colorectal surgeon, all housed on the same floor with us makes collaborating a lot easier."

Dr. Sunde joined Baylor in 2019 after a long career in one of the Army's residency training programs in McChord, WA.

"I really enjoy teaching residents, so that was a big draw for me," Dr. Sunde said. His wife was able to enroll in a clinical trial for treatment of her breast cancer while he was in the Army. As a result, he stated, "I also wanted to develop an active clinical trials program, to provide access to the latest

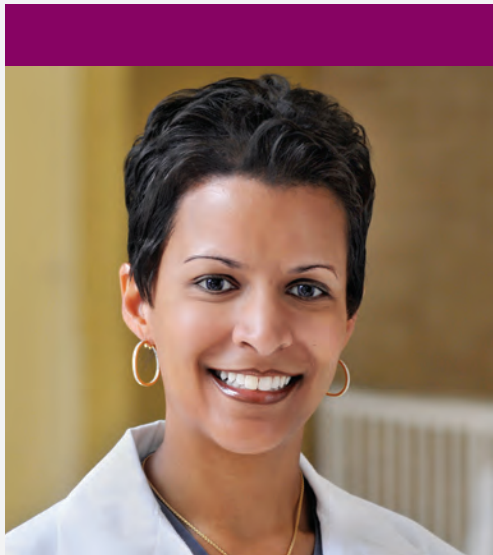
developments in personalized medicine treatments. There's a lot of opportunity for recruiting patients and working cross-institutionally with Ben Taub, the Pavilion for Women, and Baylor St. Luke's."

"Since we have ramped up the size of our division, we can have a bigger presence with providers and continue to increase our referral base for patients and trials," Dr. Sunde said.

Examples of the latest clinical research includes a phase one cervical cancer trial where immunotherapy drugs are combined with radiation treatment to see if that particular combination makes the radiation perform better than when combining chemotherapy drugs, as well as participation in cooperative group trials evaluating new medical treatments and surgical options.

"In the lab, we found that endosalpingiosis, a condition where fallopian tube tissue grows ectopically, has recently been considered to be a possible precursor to ovarian cancer," Dr. Sunde said. "We hope for data that helps us understand the very first steps of ovarian cancer, pointing us in the right direction for decreasing the chance of developing ovarian cancer, especially for those at high risk."

MATERNAL-FETAL MEDICINE (MFM)



Christina Davidson, MD
Associate Professor

BAYLOR DOCTORS PLAY A KEY ROLE IN HOSPITALS RECEIVING A LEVEL IV DESIGNATION

5,481

Consultations at the Pavilion for Women and Community MFM clinics

95

Patients seen in Pavilion MFM/Congenital Heart Clinic

646

Full OB care patient visits

56

Percreta cases at Pavilion for Women

625

Unique patients in Women's Services seen for MFM Transfer of Care visits

11

Percreta cases at Ben Taub

280

Transports - 45.7% increase in number of patient transports year over year



Catherine Eppes, MD
Assistant Professor

“The goal in assigning levels to hospitals is to ensure that moms are delivered in the hospital most appropriate to meet their needs based on their medical condition,” said Dr. Christina Davidson, associate professor in Baylor’s department of Obstetrics and Gynecology and Maternal Medical Director for Texas Children’s Pavilion for Women, a role designated by the state for oversight of the obstetric quality assessment and performance improvement program. “It also establishes that every hospital, no matter what level it has received, is prepared to care for the most common medical emergencies.”

Texas is the first state to make a legislative mandate about maternal levels of care, in order to receive Medicaid reimbursement. The designation levels were based on the Society of Maternal-Fetal Medicine’s and the American College of Obstetrics and Gynecology’s (ACOG) recommended processes and guidelines. While Level I is the highest designation for trauma centers, Level IV is the highest designation for maternal and neonatal care facilities.

“Baylor has supported the mission of improving maternal outcomes in Texas for a long time, so we wanted to be a part of the process early on to help with development and the pilot program,” said Dr. Catherine Eppes, assistant professor in Baylor’s department of Obstetrics and Gynecology, Maternal Medical Director for Ben Taub Hospital, and state faculty chair for the Alliance for Innovation and Maternal Care (AIM).

Facilities applying for a Level I designation aren’t required to participate in the state’s two-day, on-site survey, but levels II, III and IV must. A Level IV facility must meet all Level III requirements plus provide on-site medical and surgical care of the most complex maternal conditions and critically ill pregnant women and fetuses throughout antepartum, intrapartum and postpartum care.

“We felt like we had the capacity, skills and infrastructure to care for the most complex

maternal patients,” Dr. Davidson said. “We earned the Level IV designation by satisfying about 125 guidelines and completing the state’s survey.”

A few unique factors helped with both Ben Taub’s and the Pavilion’s designation, including an MFM critical care team, having medical and surgical specialists and sub-specialists available and obstetric nurses with critical care experience and training.

“The multi disciplinary collaboration with our Baylor colleagues outside of the department of Obstetrics and Gynecology is critical to this. They provide 24/7 care at Ben Taub and the Pavilion,” Dr. Davidson said. “Our ability to be a Level IV hospital is dependent upon having non-OB/GYN providers available to consult on our patients within 30 minutes.”

Dr. Eppes is grateful for her unique view, as state chair of AIM, of implementations at facilities across the state.

“I’ve learned so much from the smaller, rural hospitals about how to get things done with limited resources. They’re very innovative and creative,” Dr. Eppes said.

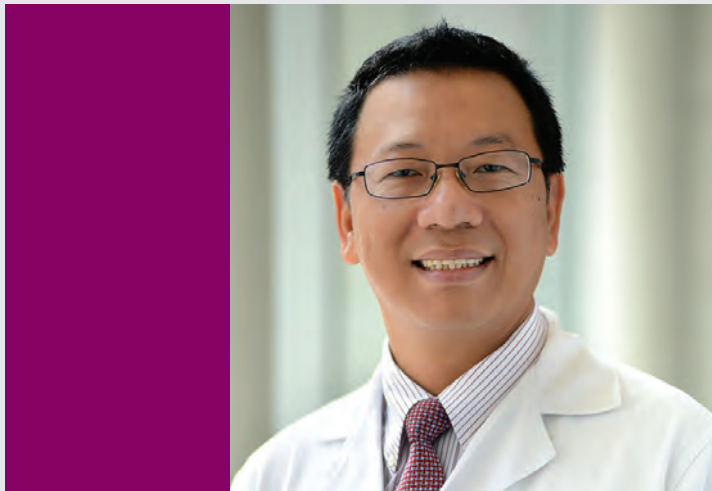
Dr. Eppes’ experience with AIM bundles has also helped her recognize cyclical, multi-dimensional improvements.

“I learn lessons from all over and bring them back to Baylor where we benefit from them,” Dr. Eppes said. “On the flip side, I can also show other facilities what worked and didn’t work during rollout of some of these bundles.”

Dr. Davidson said she applauds the state mandate because it requires a certain level of care for women.

“It really identifies which hospitals are best equipped to take care of complex patients, so I hope other states adopt this type of legislation,” Dr. Davidson said.

MINIMALLY INVASIVE GYNECOLOGIC SURGERY



Xiaoming Guan, MD, PhD
Professor
Director, Division of Minimally Invasive Gynecologic Surgery



241

Unique surgeries performed by Dr. Guan at the Pavilion for Women



166

Single-site surgeries



136

Unique robotic surgeries performed by Dr. Guan at the Pavilion for Women



34

Transvaginal surgeries

NEW DESIGNATION SPOTLIGHTS SURGICAL CARE, WHILE NEW ROBOT ADVANCES GYNECOLOGIC SURGERIES

The Pavilion for Women was accredited as a Center of Excellence for Minimally Invasive Gynecology, along with two Baylor surgeons: Dr. David Zepeda and Dr. Xiaoming Guan.

“This designation signals to patients a higher standard for patient safety, surgical skill and quality of care,” said Dr. Xiaoming Guan, program director for the Center of Excellence for Minimally Invasive Gynecologic Surgery and professor of Obstetrics and Gynecology for Baylor. “It’s an honor to be recognized for what we’re achieving in women’s gynecologic care.”

Due to high demand for surgical treatment of endometriosis, a new robotic platform was acquired by the Pavilion for Women. About 80-90% of endometriosis surgery performed by Dr. Guan is done robotically because it offers one of the best care options.

“You can see better and perform longer surgeries,” Dr. Guan said. “It also gives us leverage to do more complex surgeries in a more defined way, which allows us to take better care of the patient.”

“Robotic surgery is 3D and magnifies better, which helps us to remove more endometriosis lesions. It’s also a much better instrument than our fingers

because we can use it at any angle,” Dr. Guan said. “It reduces fatigue for the surgeon because our hands are supported, helping us maintain energy for longer procedures.”

Dr. Guan is also a pioneer in the U.S. when it comes to performing natural orifice robotic gynecologic surgery.

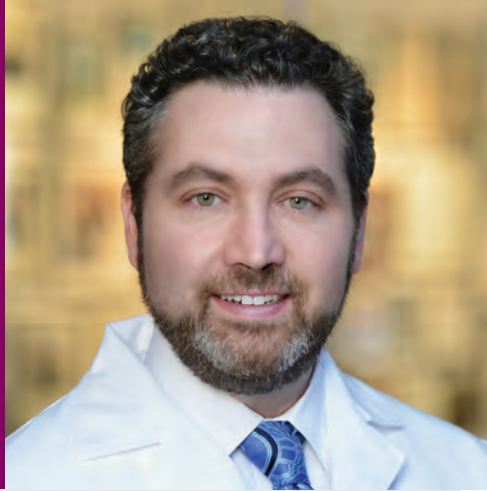
“This is another area where it can be hard to see,” Dr. Guan said. “Doing a vaginal hysterectomy robotically is a huge benefit to the patient because it means no incision, quicker recovery, decreased pain, and less risk for infection.”

Working at the Pavilion for Women and CHI St. Luke’s Health-Baylor, Dr. Guan has performed more than 600 cases using a robotic single-site approach.





“Dr. Jackson’s main robotic procedure, a sacrocolpopexy, is performed at the Pavilion for Women to repair pelvic organ prolapse.”



Jacob Kowenski, MD
Assistant Professor



12,178

Unique patient encounters



7,063

Unique patients



1.63%

Total deliveries by Hospitalists

NEW OB HOSPITALIST FELLOWSHIP STEMS FROM SURGE IN DEMAND FOR HOSPITALISTS

With less than five other hospitalist fellowships in the country, the OB Hospitalist Fellowship program at the Pavilion for Women is a unique opportunity for physicians looking to expand their knowledge in OB emergencies.

“Our fellows have the opportunity to increase their skill set when it comes to postpartum hemorrhage, sepsis, complicated deliveries, ultrasounds and high-risk pregnancies,” said Dr. Jacob Kowenski, assistant professor in Baylor’s division of Obstetric Hospitalists.

The hospitalist fellowship program includes one year of intensive training, and the physician is typically five years post-residency.

“There is a huge demand for hospitalists, so we’re hoping to fill that need with this program,” Dr. Kowenski said. “The expectation is that after the fellowship, the physician would immediately go into a hospitalist role.”

The fellow has considerable opportunities to be involved at the Pavilion for Women due to the volume of deliveries and the complexity of the patients.

“We care for everyone that comes into the evaluation unit, including patients who don’t have an assigned physician at the hospital,” Dr. Kowenski said. “We also manage the high-risk

patients at night, and on weekends we’re backup to the midwifery group.”

The hospitalist team provides support 24 hours a day, seven days a week with a minimum of two providers onsite. The fellow will work alongside the hospitalist team to evaluate and manage patients, and refine ultrasound skills.

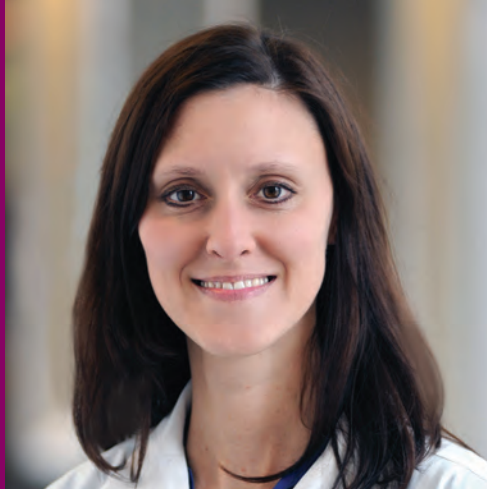
“Our fellow will also be involved in all safety meetings,” Dr. Kowenski said. “One of their assignments is a quality improvement project to complete before graduation.”

Another component of the program is research. Since it’s a shorter fellowship, a prospective randomized study may not be feasible, but case studies, reviews and reports are expected.

The group’s first fellow, Ahmed Abousief, MD, started in July 2019. He trained in Qatar and most recently was conducting research at Mt. Sinai Hospital in New York City.

“There is a huge demand for hospitalists, so we’re hoping to fill that need with this program.”

- Jacob Kowenski, MD



Jennifer Dietrich, MD
Professor
Director, Division of Pediatric and Adolescent Gynecology



12,737

Clinic visits



1,086

Procedures



452

Minimally invasive gynecologic procedures in children and adolescents



64

Congenital anomaly surgery cases

TELEHEALTH GIVES PATIENTS CONVENIENT ACCESS TO CARE

Dr. Jennifer Dietrich, professor and director of Baylor College of Medicine’s division of Pediatric and Adolescent Gynecology, began Telehealth to address patient access and the increase in demand for her team’s expertise.

“Pediatric and adolescent gynecology is very busy, and our patients were experiencing wait times for appointments,” Dr. Dietrich said. “Couple that with our on-call responsibilities at three of our hospital sites, and it limits our time for in-office visits.”

To balance the load of follow-up visits for existing patients with new-patient demand, the team outlined what type of appointments could be handled remotely.

“We knew there were post-op visits and certain medication checks that we could manage virtually,” Dr. Dietrich said. “And depending on the type of need, we could offer varying appointment lengths, ranging from 15 minutes to an hour.”

Reviews of imaging and test results are appointment types where the team has seen a lot of success.

“Once the patient accesses the secured app, we can go over imaging of an MRI or ultrasound and discuss what we’re seeing,” Dr. Dietrich said. “A picture really is worth a thousand words—it helps with the patient’s understanding.”

Counseling-type appointments have also worked well in this setting.

“It’s not uncommon for us to be asked to evaluate someone for fertility preservation prior to chemo or radiation treatment,” Dr. Dietrich said. “We can use this method to discuss their treatment plan and options for fertility preservation.”

Dr. Dietrich says she hears firsthand just how much the patients are on board with telemedicine.

“I hear praises about convenience and savings in parking costs, so I know it was the right move for our patients,” she said.

From Saturday appointment times to expanded offerings in rural areas, the team is brainstorming opportunities for helping more people.

“There is a possibility we could provide consultation on a broad geographic level if providers in the Pediatric and Adolescent Gynecology division had licensure in states other than Texas,” Dr. Dietrich said. “I often wonder about what places need us because there isn’t access to pediatric gynecology in all states in the US.”

REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY



Paul Zarutskie, MD
Associate Professor

A NEW FACILITY IN THE WOODLANDS BROADENS BAYLOR'S REACH FOR HELPING FERTILITY PATIENTS

Expanding beyond the Texas Medical Center to The Woodlands was a natural progression for Baylor's division of Reproductive Endocrinology and Infertility, considering maternal-fetal medicine services are onsite, and Texas Children's Hospital is next door.

their cycle to have ultrasounds, blood work and other monitoring procedures."

Focusing on ease of access for patients, the team integrates care by using the Pavilion for Women's state-of-the-art laboratory for egg recoveries and embryo transfers. At The Woodlands facility, patients benefit from andrology services (sperm count), ultrasounds (monitoring of uterus, follicles and viability) and reproductive psychiatry (counseling for patients and their partners).

"I have to credit a larger team, which includes the general ob-gyn and maternal-fetal medicine

"Looking at the commute for our patients coming from this area as well as from Kingwood, Tomball, and Katy was a big factor," said Dr. Paul Zarutskie, associate professor in Baylor's division of Reproductive Endocrinology and Infertility. "We wanted to make it convenient for our patients who were coming in two or three times a week during

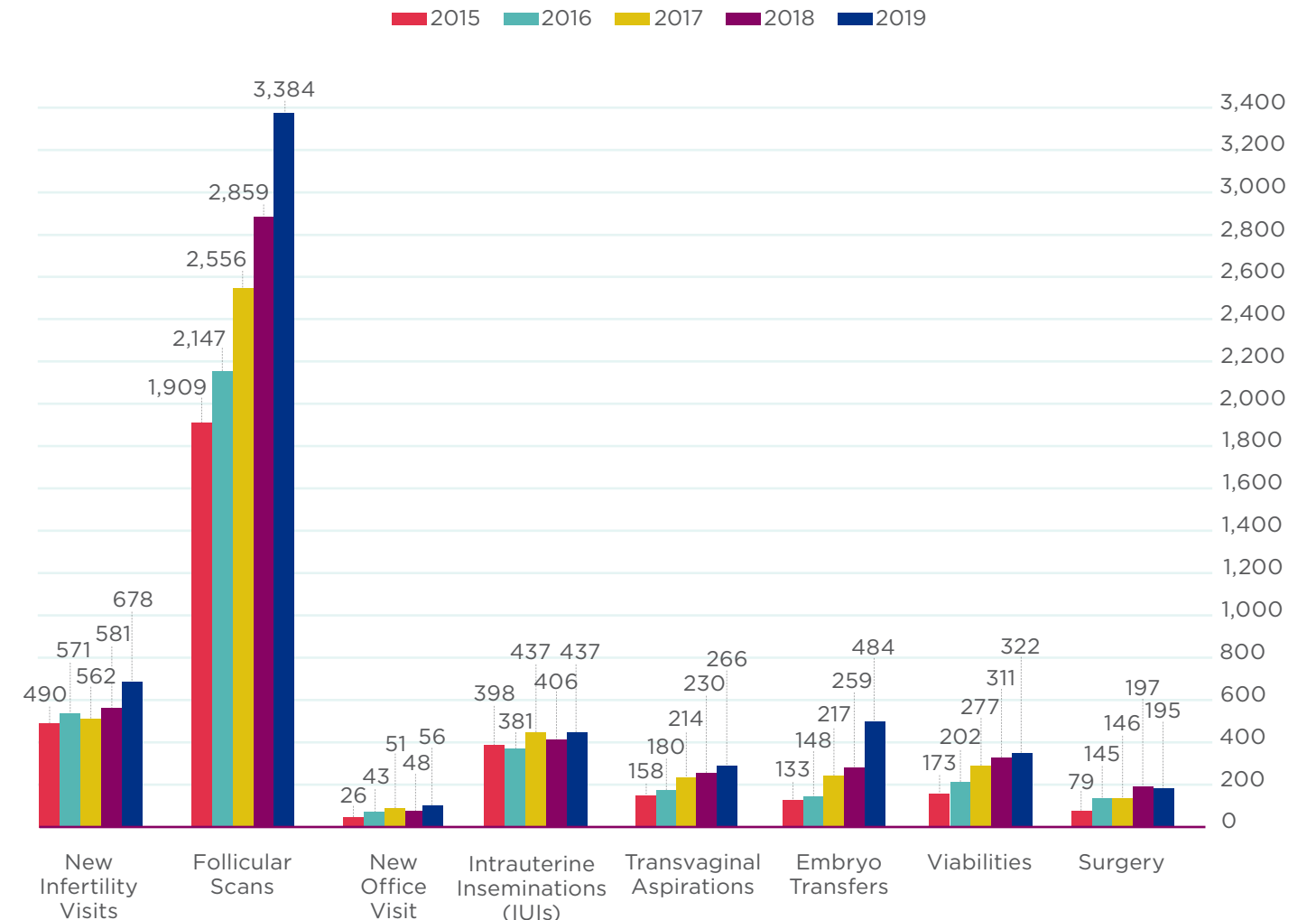
divisions, because they were critical in opening this facility," Dr. Zarutskie said. "Our patients are accessing multiple disciplines in one building, which really demonstrates the individualized care that Baylor is known for."

The team has seen an immediate response at the facility just through word-of-mouth referrals.

"We started in late January, and we're very happy with the interest we have seen from the community," Dr. Zarutskie said.

"We can have a major role in integrating care in other locations," Dr. Zarutskie said. "The Woodlands program is providing us new insights into the importance of both ease of access and individualized patient care in the community."

FAMILY FERTILITY CENTER: CY 2015 - 2019





Lucy Puryear, MD
Associate Professor



6,145

Clinic visits at the Pavilion for Women



1,483

Clinic visits in the community

NEW HORMONE-BASED POSTPARTUM DEPRESSION DRUG HELPS WOMEN GET BETTER FASTER

“Postpartum depression (PPD) is a whole-family illness,” said Dr. Lucy Puryear, associate professor in Baylor’s division of Reproductive Psychiatry. “It doesn’t just take a toll on the mom, it impacts the newborn, other children, along with family members and friends who are helping the family.”

Because PPD creates such burdens, Dr. Puryear and team were excited to see how quickly a new drug, Brexanolone, worked.

“Women appeared to get better within 24-48 hours, where other psychiatric treatments can take three to six weeks to work,” Dr. Puryear said. “It’s exciting to have this for a new mom who is struggling to function and care for her baby. PPD robs them of the joy that most people expect to have after delivery.”

Brexanolone is not a typical psychiatric drug because it’s a hormonal modulator. It’s a metabolite of progesterone, which is a hormone greatly elevated during pregnancy and then quickly decreased postpartum. One theory about PPD has been that the change in hormones triggered the depression.

“It’s been frustrating for many women because they didn’t have a history of depression, and their depression was clearly linked to childbirth,” Dr. Puryear said. “This new treatment seems based on the likely cause of the disorder and targets the

pathophysiology of the illness, and there are very few side effects, so there’s a lot of enthusiasm for it.”

With most new treatments come obstacles, and this holds true for this IV-administered drug, which was approved by the FDA last July. Because its approval was fast-tracked, it didn’t have the long-term safety outcome data and now requires a 72-hour in-patient hospitalization and a Risk Evaluation and Mitigation Strategy certification to administer.

“We’ve completed training for it at the Pavilion for Women, but we’re running into challenges, like many of the bigger institutions in the country,” Dr. Puryear said. “Bed availability, cost/reimbursement and patient safety are the issues right now.”

Texas Medicaid is working on approval for use and reimbursement for the drug, so that women, regardless of their ability to pay, have access to the treatment.

“I think in the long run, we will see a reduction in cost because we’ll see treatment move out of the hospital and into an outpatient or even possibly a home setting, where it can be used as a home infusion,” Dr. Puryear said. “If we can reduce the burden of this disease by getting women back to functioning more quickly, it reduces the toll on the whole family.”

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Stacey Coombes, MD
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Erica Giwa, MD
Stacey Godley, MD
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MAJOR PRESENTATIONS

1. Kulbida N (Moderator), Haeri S, Nielsen P (Discussants). Telemedicine in Obstetrics and Gynecology. ACOG Update. Volume 44, No. 7, January 1, 2019.
2. Berra AL, Stafford IA, Moaddab A, Klassen M, Clark SL, Dildy GA. The prevalence of placenta previa in pregnancies complicated by amniotic fluid embolism. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
3. Boerwinkle CH, Tolcher MC, Hoff HS, Aagaard KM. Obstetric and neonatal outcomes after cleavage versus blastocyst stage embryo transfer. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
4. Cao YE, Jiang Y, Clinger A, Peacock S, Schmitt E, Van den Veyver IB, Eng C, Zhang J. Clinical utility of non-invasive prenatal screening for common dominant monogenic disorders presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
5. Davidson C, Davis B, Krueger A, Wilson S, Denning S, Clark SL. Decreasing postpartum opioid use after uncomplicated vaginal deliveries. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
6. Davis B, Clark SL, McDonald K, Young T, Swaim L. The impact of a birth plan on maternal and neonatal delivery outcomes. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
7. Erfani HS, Fox KA, Shah SC, Stewart KA, Sheu JC, Kravitz ES, Shamshirsaz AA, Hui S, Nassr AA, Salmanian B, Tung CS, Lake YN, Clark SL, Teruya J, Belfort MA, Shamshirsaz AA. Unexpected Placenta Accreta Spectrum (PAS): Improved outcomes with Multidisciplinary Team Care. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
8. Erfani HS, Mendez-Figueroa HR, Aagaard KM, Shamshirsaz AA. It's Time for Maternal-Fetal Medicine Researchers to Tweet. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
9. Espinoza J, Hudson K, Shamshirsaz AA, Nassr AA, Sanz Cortez M, Espinoza AF, Erfani HS, Belfort MA. Differences in impedance to blood flow in the umbilical arteries determine infant survival in TTTS. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
10. Espinoza J, Zamudio G, Sanz Cortez M, Shamshirsaz AA, Nassr AA, Whitehead WE, Yopez MC, Erfani HS, Belfort MA. Magnesium sulfate titration reduces maternal complications following fetal repair of spina bifida. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
11. Farishta A, Tolcher MC, Eppes CS, Clark SL. Admission fetal heart tracing category and risk of cesarean delivery. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
12. Fox KA. Use of REBOA in Accreta and the Database. Placenta Accreta Forum Presentation at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
13. Jang AY, Erfani HS, Kravitz ES, Stewart KA, Shah SC, Nassr AA, Espinoza J, Lee TC, Olutoye OA, Sanz-Cortes M, Olutoye OO, Belfort MA, Shamshirsaz AA. Characteristics and neonatal outcomes of ex utero intrapartum treatment for giant head and neck teratomas. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
14. Kravitz ES, Erfani HS, Jang AY, Stewart KA, Shah SC, Nassr AA, Espinoza J, Sanz-Cortes M, Belfort MA, Shamshirsaz AA. Obstetric Outcomes of Ex-Utero Intrapartum Treatment (EXIT) for Fetal Neck Mass. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
15. Mastrobattista J. BPS: Bronchopulmonary Sequestration. Ultrasound (Chest "Masses": The Common and the Uncommon) Forum Presentation at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
16. McKinney J, Seferovic M, Watkin L, Prince A, Suter M, Aagaard KM. Autophagy and ZIKV viral replication co-occur in only some human and primate placental cells: therapeutic implications. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
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18. Mendez-Figueroa HR, Tolcher MM, Shamshirsaz AA, Pace R, Chu D, Aagaard KM. Increase in maternal and neonatal infections following Hurricane Harvey. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
19. Mendez-Figueroa HR, Tolcher MM, Shamshirsaz AA, Pace R, Chu D, Aagaard KM. Impact of severe stress after a major natural disaster on perinatal outcomes. Oral session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
20. Mendez-Figueroa HR, Tolcher MM, Shamshirsaz AA, Pace R, Chu D, Aagaard KM. It's Time for Maternal-Fetal Medicine Researchers to Tweet. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
21. Mendez-Figueroa HR, Tolcher MM, Shamshirsaz AA, Pace R, Chu D, Aagaard KM. Effect of Hurricane Harvey on Perinatal Outcomes. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
22. Meyer KM, Engevik M, Aagaard KM. Human milk oligosaccharides (HMOs) promote growth of commensal Streptococcus spp. abundant in human milk. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.

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24. Meyer KM, Pace RM, Prince AL, Seferovic M, Chu DM, Aagaard KM. Comparison of placenta with DNA extraction controls provides evidence for distinct microbiota in placenta samples. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
25. Meyer KM, Prince AL, Aagaard KM. Maternal IgA targets commensal microbiota in breast milk and the maternal and infant gut microbiomes. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
26. Nassr AA, Erfani HS, Espinoza J, Sanz-Cortes M, Koh C, Braun M, Belfort MA, Shamshirsaz AA. Novel scoring system for determining fetal candidates for prenatal intervention in severe congenital LUTO. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
27. Nassr AA, Shamshirsaz AA, Erfani HS, Espinoza J, Cortes MS, Koh C, Braun M, Mandy G, Ruano R, Belfort MA. Outcomes of fetuses with lower urinary tract obstruction and normal amniotic fluid: a single center experience. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
28. O'Neil DS, Goodspeed DM, Gonzalez-Rodriguez PJ, Fuentes C, Shope C, Belfort MA, Aagaard KM. Development of a tissue specific alpha-fetoprotein enhancer transgene with potential utility for fetal gene therapy. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
29. O'Neil D, Goodspeed D, Gonzalez-Rodriguez PJ, Fuentes C, Shope C, Belfort M, Aagaard KM. Development of a Novel Tissue Specific Alpha-feto Protein (AFP) Enhancer Transgene with Potential Utility for Fetal Gene Therapy. Oral session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
30. O'Neil D, Goodspeed D, Gonzalez-Rodriguez PJ, Hu M, Shope C, Aagaard KM. The Importance of Fetal Expression of Npas2 in Regulating Lifelong Satiety. Oral session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
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34. Pace R, Chu D, Seferovic M, Suter M, Cox J, Vidaeff A, Aagaard KM. Amniotic fluid contains detectable microbial DNA that significantly differs from appropriate contamination controls. Oral session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
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36. Pallapati J, Pan ET, Yepez MC, Espinoza J, Nassr AA, Shamshirsaz AA, Olutoye OO, Whitehead WE, Belfort MA, Sanz-Cortes M. Chorioamniotic separation after prenatal myelomeningocele repair. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
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40. Sanz-Cortes M, Yepez MC, Pyrali M, VanLoh SA, Pan ET, Pallapati J, Espinoza J, Shamshirsaz AA, Nassr AA, Whitehead WE, Olutoye OO, Belfort MA. Prenatal open hysterotomy vs. two-port exteriorized uterus fetoscopic myelomeningocele repair: perinatal outcomes from a single center. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
41. Sanz-Cortes M, Yepez M, Torres P, Andruccioli A, Pyrali M, Espinoza J, Shamshirsaz AA, Nassr AA, Whitehead WE, Olutoye OO, Castillo J, Castillo H, Ostermaier KK, Belfort MA. Prenatal open vs. two-port exteriorized uterus fetoscopic myelomeningocele repair. Neurosurgical outcomes from a single center. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
42. Shamshirsaz AA. Update on Abnormally Invasive Placenta Consortium: Twin Accreta. Forum Leader, Placenta Accreta Forum Presentation at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
43. Seferovic M, Valentine G, Molina-Pineda J, Suter M, Meyer KM, Gorchakov R, Berry R, Fowler S, Murray K, Aagaard KM. Maternal Microbiome Diminishes Fetal Infection and Demise in a Murine Model of Congenital Zika Syndrome. Oral session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
44. Stafford IA, Berra AL, Minard CG, Fontenot V, Kopkin RH, Rodrigue E, Roitsch CM, Rac MW, Hill JB. Challenges in the Contemporary Management of Syphilis among Pregnant Women in New Orleans, LA. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
45. Stewart KA, Erfani HS, Shah SC, Jang AY, Kravitz ES, Nassr AA, Espinoza J, Lee TC, Olutoye OA, Sanz-Cortes M, Olutoye OO, Belfort MA, Shamshirsaz AA. Cervical lymphatic malformations: Prenatal imaging characteristics and neonatal outcomes of ex-utero intrapartum

- treatment. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
46. Suter M, Coarfa C, Lingappan K, Perera D, Moorthy B, Aagaard K. Prenatal exposure to polycyclic aromatic hydrocarbons is associated with alterations in the placental transcriptome. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
 47. Suter M, Kahr m, Antony K, Hu M, Aagaard K. GLSutP-2 and association with protection against metabolic endotoxemia in pregnancy from excess gestational weight. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
 48. Tolcher M, Magistrado L, Suhag A, Aagaard K. Obstetric and neonatal outcomes with advanced maternal age: 45 years. Poster session presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
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 52. Van den Veyver, IB. What is New with Non-Invasive Prenatal DNA Screening: Moving Beyond NIPT/NIPS. Oral presentation at: Update in Prenatal Genetics session, Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
 53. Van den Veyver, IB. Expanded Carrier Screening: Updates, Counseling Challenges and Integration into Clinical Practice. Oral presentation at: Update in Prenatal Genetics session, Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
 54. Vossaert L, Wang Q, Salman R, McCombs A, Henke D, Qu C, Bi W, Levy B, Yang Y, Shaw C, Wapner R, Breman A, Van den Veyver IB, Beaudet A. A pilot validation study for cell-based noninvasive prenatal testing (NIPT) in 42 cases presented at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
 55. Clark SL. The Pregnant Cardiac Patient, Part II: Pearls and Pitfalls; Postgraduate Course Faculty at: Society for Maternal-Fetal Medicine 39th Annual Meeting on Pregnancy, 2019 Feb 11-16, Las Vegas, NV.
 56. Arian S, Mahadevan S, Erfani H, Ramakrishnan R, Liao L, Shelly K, Van den Veyver IB. Maternal loss of Nlrp2 results in abnormal reproductive outcomes independent of the uterine environment. Oral presentation at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
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 58. Barsky M, Liubin Y, Hosseinzadeh P, Dunn J, Gibbons WE, Blesson CS. Fetal Programming of Polycystic Ovary Syndrome (PCOS): In Utero Androgen Exposure Alters Murine Prenatal Ovarian Mitochondrial Structure and Function. Poster presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
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 62. Dong Y, van der Walt N, Pennington K, Yallampalli C. Impact of Adrenomedullin Blockage on Lipid Metabolism in Female Mice Exposed to High Fat Diets. Poster presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
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 65. Hosseinzadeh P, Liubin Y, Barsky, M, Blesson CS. Maternal Androgen Exposure Alters Gene Expression Profile in the Ovaries of Neonatal Offspring. Poster presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
 66. Kaskar K, Cochran R, Blesson C, Hamilton D, David A, Henkel R, Gibbons W. Insulin and IgF-1 Does Not Alter the Morphokinetics of Mouse Embryo Development. Poster presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
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70. Pennington KA, Fleischmann R, Yallampalli C, Fiorotto ML. Maternal Low Protein Diet during Gestation Programs Offspring Glucose Intolerance in Adulthood Regardless of Postnatal Plane of nutrition in Female Mice. Poster presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
71. Pennington KA, Hernandez SR, Sangi-Haghpeykar H. Effect of Gestational Diabetes Mellitus on Long Term Maternal Health in a Novel Mouse Model. Oral session presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
72. Rajhans P, Goin-Kochel R, Strathearn L, & Kim S. Intranasal oxytocin enhances father's brain response to infant smile. Poster session presented at: the Society for Research in Child Development. 2019 Mar 20-24, Baltimore, MD.
73. Yadav G, Rohondia S, Erfani H, Kilpatrick C, Turrentine M. Academic Tweeting in #ObGyn. Where do we stand? Oral session presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
74. Yan H, Chen Y, Yallampalli C, Gao H. Reduced AMPK Signaling Impairs Placental Mitophagy in Women with Gestational Diabetes Mellitus. Oral session presented at: the Society for Reproductive Investigation, 66th Annual Scientific Meeting. 2019 Mar 12-16; Paris, France.
75. Shields A, Nielsen P, Battistelli J, Thomson B. Playing with the Band: How to Achieve Consensus on Needs Assessments Using the Modified Delphi Technique, CREOG & APGO Annual Meeting; 2019 Mar. New Orleans, LA.
76. Blesson CS, Mahadevan S, Tanchico D, Balakrishnan M, Harris RA, Yallampalli C. Gestational Programming of Type 2 Diabetes: Does Methylation Play a Role? Poster presented at: Texas Forum for Reproductive Sciences 25th Annual Meeting. 2019 April 11-12; College Station, TX.
77. Coarf C, Lingappan K, Perera D, Moorthy B, Aagaard K, Suter M. Targeted Mass Spectrometry Coupled with RNA-Seq reveals Prenatal Exposure to Polycyclic Aromatic Hydrocarbons (PAHs) is Associated with Alterations in the Placental Transcriptome. Poster presented at: Texas Forum for Reproductive Sciences 25th Annual Meeting. 2019 April 11-12; College Station, TX.
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80. Patil J, Barsky M, Blesson CS. Prenatal Androgen Exposure Alters Gene Expression Patterns in Neonatal Uterus. Poster presented at: Texas Forum for Reproductive Sciences 25th Annual Meeting. 2019 April 11-12; College Station, TX.
81. Pennington K, Dong Y, Ruano SH, van der Walt N, Yallampalli C. Adrenomedullin as a Potential Mediator of Altered Energy and Fat Metabolism in Normal and GDM. Poster presented at: Texas Forum for Reproductive Sciences 25th Annual Meeting. 2019 April 11-12; College Station, TX.
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83. **Deering S**. (Course Faculty) "Fundamentals of Critical Care Support - OB". Society of Critical Care Medicine, The Children's Hospital of San Antonio; 5 Apr 2019. San Antonio, TX.
84. **Shields A**. (Course Director) "Fundamentals of Critical Care Support - OB". Society of Critical Care Medicine, The Children's Hospital of San Antonio; 4-5 Apr 2019. San Antonio, TX.
85. Meaie J, Pickrell B, **Gandhi M**, Buchanan E. Ultrasound Sensitivity Analysis for Prenatal Diagnosis of Cleft Lip and/or Cleft Palate: Report from a single high-volume tertiary referral center. Poster presented at: 76th Annual Meeting of the American Cleft Palate-Craniofacial Association. 2019 Apr 9-13; Tucson, AZ.
86. Kaskar K, Cochran R, Hamilton D, David A, Henkel R, **Gibbons W, Blesson CS**. Does culture of embryos in an ultra-low (2%) oxygen environment yield better blastocyst development than 6% oxygen using time-lapse morphokinetics? Poster presented at: The 23rd Annual College of Reproductive Biology (CRB) Symposium. 2019 May 16-18; New Orleans, LA.
87. Kaskar K, Cochran R, Hamilton D, David A, Henkel R, **Gibbons W, Blesson CS**: Finding a better mouse model for quality control and research studies in the IVF laboratory. Poster presented at: The 23rd Annual College of Reproductive Biology (CRB) Symposium. 2019 May 16-18; New Orleans, LA.
88. Kaskar K, Cochran R, Hamilton D, David A, Henkel R, **Gibbons W, Blesson CS**: Insulin and IgF-1 does not alter the morphokinetics of mouse embryo development. Poster presented at: The 23rd Annual College of Reproductive Biology (CRB) Symposium. 2019 May 16-18; New Orleans, LA.
89. Tatem AJ, McBride JA, Guner J, Beilan J, Gondokusumo J, Mazur DJ, **Schutt AK, Zarutskie PW, Gibbons WE**, Lipshultz LI. Cutting the Cost of Parenthood: The Efficacy and Cost Savings of Compounded Follicle Stimulating Hormone. Poster presented at: the American Urological Association annual meeting. 2019 May 3 - 6; Chicago, IL.
90. **Deering S**. (Course Director) "Emergencies in Clinical Obstetrics - A Hands-On Simulation Course" American College of Obstetricians and Gynecologists Annual Clinical Meeting; 6 May 2019. Nashville, TN.
91. Keyser EA, Chescheir NC, McHale M, **McKenzie LJ**, Myers DL. 5 Minute Updates for the Busy OB/GYN. Hands-on, Postgraduate Course at American College of Obstetricians and Gynecologists Annual Clinical Meeting Nashville, Tennessee. May 5, 2019.
92. **Mastrobattista JM**, Galan HL, Minton KK, Turan S, Zaretsky M. Basic Obstetric Ultrasound. Hands-on, Postgraduate Course at American College of Obstetricians and Gynecologists Annual Clinical Meeting Nashville, Tennessee. May 5, 2019.
93. Hill JB. Society of Critical Care Medicine, Fundamentals of Critical Care Support: Obstetrics. Lecturer and Skills Station Facilitator, The Children's Hospital of San Antonio.
94. Nielsen PE. Society of Critical Care Medicine, Fundamentals of Critical Care Support: Obstetrics. Lecturer and skills station facilitator, The Children's Hospital of San Antonio.
95. Wagner R. Society of Critical Care Medicine, Fundamentals of Critical Care Support: Obstetrics. Lecturer and skills station facilitator, The Children's Hospital of San Antonio.
96. Campbell S, Hoffman A, Weston J, Crocker LC, Holman D, Houston A, Volk R, Woodard TL. What is important to Women Considering Fertility

Preservation before Cancer Treatment? Comparing Decision-Making Values with and without Using The Pathways Patient Decision Aid Website.

Poster presented at: The American Society for Reproductive Medicine (ASRM) Scientific Congress and Expo, 2019 Oct 12-16, Philadelphia, PA.

97. Kaskar K, Cochran R, Hamilton D, David A, Henkel R, Gibbons W, Blesson CS: Does supplementation of media with insulin or insulin-like growth factor 1 (IGF-1) enhance morphokinetics of mouse embryo development? Poster presented at: The American Society for Reproductive Medicine (ASRM) Scientific Congress and Expo, 2019 Oct 12-16, Philadelphia, PA.
98. Kaskar K, Cochran R, Hamilton D, David A, Henkel R, Gibbons W, Blesson CS: Effect of ultra-low oxygen (2%) environment on mouse embryo morphokinetics and blastocyst development. Poster presented at: The American Society for Reproductive Medicine (ASRM) Scientific Congress and Expo, 2019 Oct 12-16, Philadelphia, PA.
99. Kaskar K, Cochran R, Hamilton D, David A, Henkel R, Gibbons W, Blesson CS: Increasing the efficacy of mouse embryo assays for quality control in the IVF laboratory. Poster presented at: The American Society for Reproductive Medicine (ASRM) Scientific Congress and Expo, 2019 Oct 12-16, Philadelphia, PA.
100. Yang L, Peavey M, Kaskar K, Chappell N, Zhu L, Devlin D, Valdes C, Woodard TL, Zarutskie P, Cochran R, Gibbons W: Predicting clinical pregnancy by machine learning algorithm using noninvasive embryo morphokinetics at an academic center. Poster presented at The American Society for Reproductive Medicine (ASRM) Scientific Congress and Expo, 2019 Oct 12-16, Philadelphia, PA.

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