BIDMC Obstetrics and Gynecology

2015 Annual Report

Beth Israel Deaconess Medical Center

HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

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Hope Ricciotti, MD, Chair

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From the Chair

Hope Ricciotti, MD

The Department of Obstetrics and Gynecology at BIMDC is a leader in the movement to improve the culture of academic medicine.

Today's health care challenges are so complex that it takes a team to solve them. In the OBGYN Department, we are building teams to organize care for patients, teams for research, and teams of teachers who empower students. Our mission to improve patient satisfaction compels us to value the role of each team member. That is why we listened to our front-line workers, encouraged transparency, flattened our hierarchy, and literally took down walls so that we can work together, innovate, and inspire each other to quickly turn ideas into practice.

We are known for our blend of academic rigor, innovation, and empathic, family-centered care; for quality and value in patient care, health services, clinical and basic science research; and for exceptional educational programs.

As a major teaching hospital of Harvard Medical School, the OBGYN Department is a leader in innovations in education, teaching one out of three Harvard medical students. Our intimate residency program—with 24 trainees, or six per year—allows individual mentorship and guidance that is paired with an emphasis on evidence-based medicine and research. Through collaborations with other BIDMC departments and Harvard Medical School, the OBGYN Department has produced a research portfolio reflecting the diversity valued in our department—with topics in basic science, health services, health care quality, academic

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From the Chair, *continued*

culture, and educational and clinical research. The department is a national leader in the effort to improve both patient safety and the value of the care our patients receive. Our simulation and team training curricula, which include team-based training exercises, have been nationally recognized.

As an academic department at Harvard Medical School, the OBGYN Department provides for our trainees and faculty a culture that values the contributions of each individual. By shaping our faculty positions to the unique strengths of each person, we can be flexible in our attempts to solve the vexing problems of our complex health care environment. By functioning more like a small start-up than a large corporation, new ideas are quickly tested and innovations flourish. And our grounding principle is that we treat each other and our patients with respect and dignity.

We offer accredited fellowship programs in:

- Maternal-Fetal Medicine.
- Reproductive Endocrinology and Infertility.
- Minimally Invasive Gynecologic Surgery.
- Female Pelvic Medicine and Reconstructive Surgery (in partnership with Mount Auburn Hospital, across the river in Cambridge).

The "Human First" campaign highlights BIDMC's focus on patient-centered care. "Human First" to BIDMC means being passionate about caring for our patients like they are family, finding new cures, using the finest and latest technologies, and teaching and inspiring caregivers of tomorrow.

ABOUT BIDMC

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Who We Are

Beth Israel Deaconess Medical Center

An affiliate of Harvard Medical School, Beth Israel Deaconess Medical Center provides care for patients while conducting pioneering research and teaching the next generation of doctors. With a flagship campus located in the heart of Boston's medical community, more than 750,000 patients are served each year. BIDMC has 649 licensed beds, including:

- 440 beds for medical and surgical patients.
- 77 beds for critical care patients.
- 60 beds for the Department of OBGYN.
- A Level III Neonatal Intensive Care Unit with 48 licensed beds.
- A Level I Trauma Center that offers patients the highest possible level of emergency care.

BIDMC consistently ranks among the top three recipients of biomedical research funding from the National Institutes of Health. In all, research funding totals $229.8 million annually, and BIDMC researchers run more than 850 active, sponsored projects and 500 funded and non-funded clinical trials. The nearly 6,000 diverse employees who work on the BIDMC team include 819 full-time staff physicians, 1,179 full-time registered nurses, and 3,600 staff members there to support them in providing patients with the best possible care.

BIDMC is committed to treating each patient as "human first." The Department of OBGYN delivers a unique brand of patient- and family-centered care. We provide compassionate, highly personalized treatment to a diverse community of women, from preventive care to complex, state-of-the-art services. While we are proud to be one of the most sought-after teaching hospitals in the country, we focus our attention on each and every one of the nearly 5,000 babies we deliver each year.

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Top: Harvard Medical School in Boston
Bottom: Charles River and view of Downtown Boston

Harvard Medical School

Since opening its doors in 1782 with only three faculty members teaching a handful of students, Harvard Medical School has grown to more than 11,000 faculty and 165 students selected from more than 5,000 applications each year. Under the leadership of the dean, Dr. Jeffrey Flier, the Caroline Shields Walker Professor of Medicine at Harvard Medical School and former Chief Academic Officer for BIDMC, Harvard Medical School lives out its mission "to create and nurture a community of the best people committed to leadership in alleviating human suffering caused by disease."

Living in Boston

BIDMC is located in one of the most vibrant, livable cities in the United States. Known worldwide for its state-of-the-art medical facilities and first-class educational institutions, Boston is also a hub of history and culture. Puritan colonists from England founded the town in 1630, and since that time Boston has played a central role in the political, commercial, financial, religious, and educational development of New England. Today, you'll see the city's full history reflected in its diverse, distinctive neighborhoods, well-preserved architecture, and major historical sites. The city is also modern and stylish, rich in cultural offerings, and beautifully situated near mountains and the ocean. Visit the waterfront for an impressive array of restaurants or to catch a boat to the Harbor Islands, a National Park. From skiing in the winter to hiking, swimming, and boating in the warmer months, there are endless opportunities for outdoor fun.

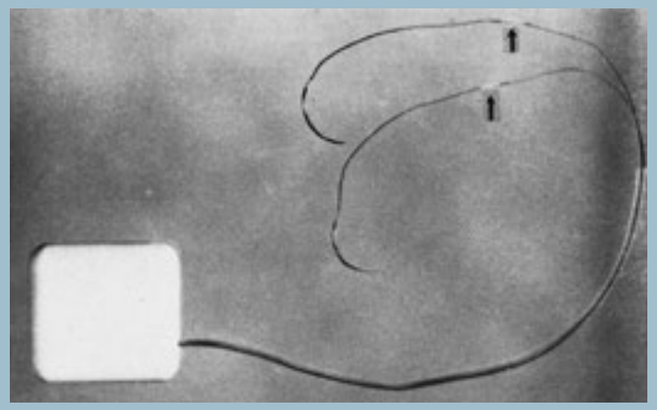
Theater, dance, art, music, and sports are all within walking or biking distance—or a quick ride on the MBTA public transportation system, known as the "T." More than 50 area museums offer exhibits and attractions for art lovers of all ages, from family-oriented activities at the Boston Children's Museum or the Museum of Science to stunning galleries at the Isabella Stewart Gardner Museum and the Institute of Contemporary Art. An evening at Boston Symphony Hall is just a "T" stop away, or check out a sketch comedy performance at Boston Improv Asylum. Cheer on the Boston Celtics, the Boston Bruins, and New England Patriots, or stroll down the street to Fenway Park, the oldest ballpark in the major leagues.

Boston is a clean and safe city that mirrors the quality and distinction you'll find at BIDMC. Whether you are new to Boston or a long-time resident, we think you'll find living in "the Hub" an exciting experience.

A MEDICAL HISTORY OF BIDMC

1960

Beth Israel Hospital (BIH) develops first implantable cardiac pacemaker.



1972

BIH implements nation's first Rights of Patients statement.

1983

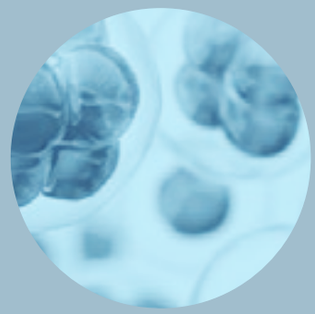
Deaconess Hospital performs first successful liver transplant in New England.

1986

BIH delivers first baby conceived through in vitro fertilization in Massachusetts.

1991

BIH researchers first to discover evidence that abnormalities in visual system of brain help explain dyslexia symptoms.



1995

Deaconess Hospital performs New England's first minimally invasive coronary bypass surgery and implants first deep brain stimulator for treatment of Parkinson's.

1998

BIDMC performs first adult live donor liver transplant in New England.

1998

BIDMC cardiothoracic surgeon William Cohn issued patent for Cohn Cardiac Stabilizer, allowing coronary artery bypass surgery without a heart-lung machine.

2003

BIDMC researchers discover probable cause of preeclampsia and publish results in *New England Journal of Medicine* and *Journal of Clinical Investigation*.

2005

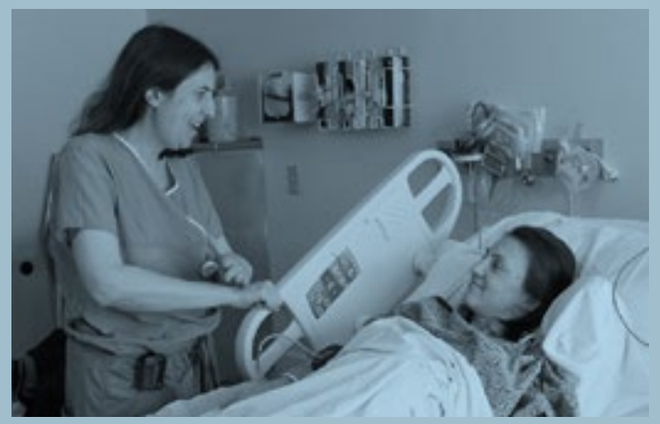
BIDMC reports the involvement of sFlt-1 factor in preeclampsia in *NEJM*.

2006

BIDMC reports a team training method for patient safety in obstetrics in *JAMA*.

2006

US News & Word Report places BIDMC among nation's Best Hospitals in six clinical specialties.



2007

BIDMC's Department of OBGYN first recipient of Blue Cross Blue Shield of Massachusetts Health Care Excellence Award in patient safety programs.

2007

BIDMC's Department of OBGYN receives Joint Commission award for excellence in patient safety and innovation

2008

BIDMC reports in *Nature* that COMT gene, known for its role in schizophrenia, also plays a role in preeclampsia.

BEST HOSPITALS
US NEWS & WORLD REPORT
RANKINGS

2009

US News & World Report ranks BIDMC in Top 50 for care and treatment in eight specialties, including gynecology.

2009

BIDMC among three hospitals recognized for leadership/innovation in quality, safety, and commitment to patient care as American Hospital Association–McKesson Quest for Quality Prize® finalist.

2010

BIDMC awarded $38.2 million from the National Institutes of Health as part of American Recovery and Reinvestment Act. BIDMC scientists receive 69 grants across all departments.

2011

US News & World Report names BIDMC Top Hospital, plus Honorable Mention for the Gynecology Division.

2011

BIDMC named nation's top-ranked healthcare information company and 12th overall on InformationWeek 500, a list of top US technology innovators.

2012

International Board of Lactation Consultant Examiners and International Lactation Consultant Association recognize BIDMC for excellence in lactation care.

2012

Becker's Hospital Review places BIDMC on its list of year's 100 Great Hospitals.

2012 & 2013

US News & World Report ranks BIDMC among top 3% of all hospitals nationally.

2014

Yvonne Gomez-Carrion, MD, and Sandra Mason, MD, Obstetrics and Gynecology, honored with BIDMC's 2014 LGBT Achievement Award for providing excellent care and an inclusive environment for LGBT patients and families.

2014

BIDMC designated as a Center of Excellence: Continence Care by the National Association for Continence.

2015

New England Center for Placental Disorders created at BIDMC.

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Honors and Awards

The BIDMC family includes a large staff of dedicated employees, working both behind the scenes and upfront with direct patient care. Here's just a small sampling of special awards and honors received so far this year:

- Hope Ricciotti, MD, Chair, was honored with The Charles J. Hatem Award for Faculty Development in Medical Education at Harvard Medical School.
- Celeste Royce, MD was honored with the Charles McCabe Faculty Prize for Excellence in Teaching at Harvard Medical School.
- BIDMC received an Excellence in Commuter Options Award from the Massachusetts Department of Transportation for offering and promoting sustainable transportation options for employees. Through MassRIDES and MassCommute, the ECO Awards support the reduction of greenhouse gas emissions through decreased drive-alone trips and encouraging carpools, bicycling, or walking.
- BIDMC received an "A" grade in the Fall 2014 Hospital Safety Score, which rates how well hospitals protect patients from errors, injuries, and infections, by The Leapfrog Group, an independent industry watchdog. The first and only hospital safety rating to be peer-reviewed in the Journal of Patient Safety, the score is free to the public and designed to give consumers information they can use to protect themselves and their families when facing a hospital stay.

Left: Celeste Royce, MD, Medical Student Associate Clerkship Director
Right: Hope Ricciotti, MD, Chair, receives the Charles J. Hatem Award for Faculty Development in Medical Education at Harvard Medical School from Edward Hundert, MD and Richard Schwartzstein, MD.

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OBSTETRICS AND GYNECOLOGY

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Hope Ricciotti, MD
Division Director, General OBGYN

Mary Herlihy, MD
Medical Director, Ambulatory Practices

Sandra Mason, MD
Clinical Director, Shapiro Practices

Renee Goldberg, MD
Clinical Director, Community Practices

Aisling Lydeard, NP
Clinical Manager, Shapiro Practices

Clinical Care

Faculty Ambulatory Practices

Shapiro 8 Faculty Practice
(hospital-based practice)

Katharyn Meredith Atkins, MD
Laura Bookman, MD
Huma Farid, MD
Toni Golen, MD
Yvonne Gomez-Carrion, MD
Mary Herlihy, MD
Ronald Marcus, MD
Sandra Mason, MD
Neel Shah, MD, MPP
Jacqueline Stephen, MD

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Community Faculty Practices

Chelsea
Monica Mendiola, MD
Anjélica Carbajal, MD

Chestnut Hill
Diane Kaufman, MD
Cindy Kobelin, MD

Lexington
Marc Kobelin, MD

Milton
Alice Shin, MD
Huma Farid, MD

Needham
Renee Goldberg, MD
Susan Lincoln, MD
Brianne Mahoney, MD

Community Health Centers

Bowdoin Street Health Center
Celeste Royce, MD
Ebonie Woolcock, MD

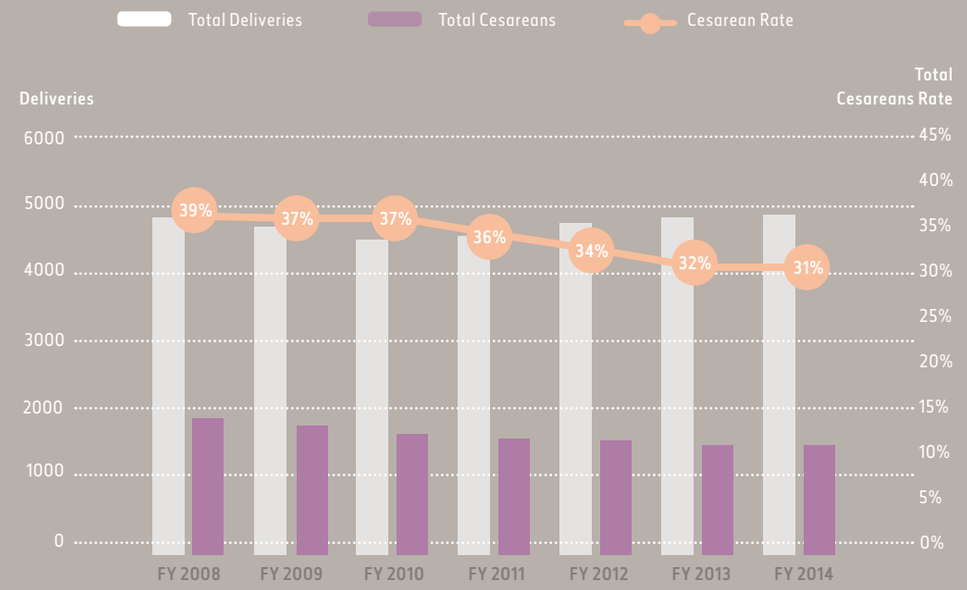
Dimock Street Health Center
Kelly Flynn, MD
Rose Molina, MD
Maryann Wilbur, MD

South Cove Community Health Center (Chinatown and Quincy)
Ira Chan, MD, MPH
Lucy Chie, MD, MPH
Janet Chollet, MD
Lily Wu, MD

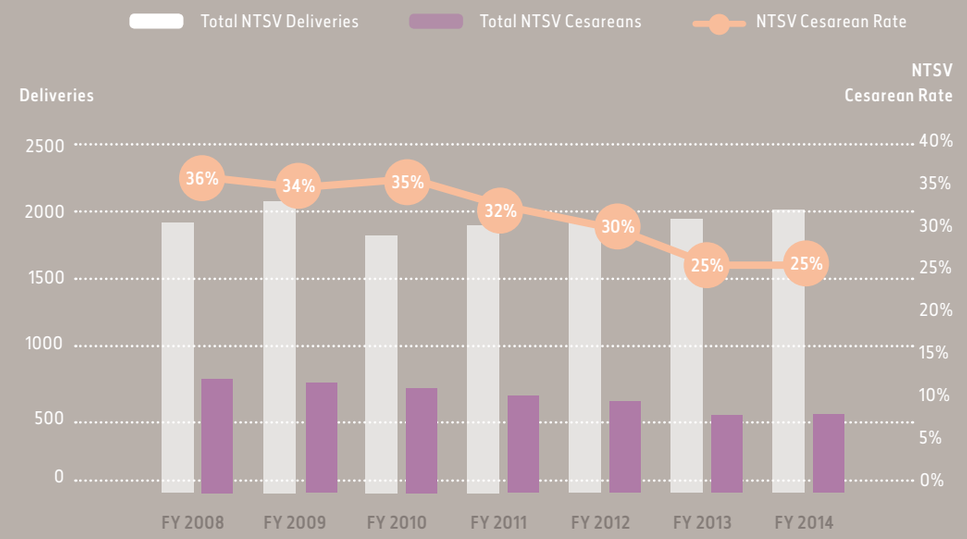
Fenway Community Health Center
Rebekah Viloria, MD

Members of the division of General OBGYN provide comprehensive women's health care in obstetrics, contraception, menopause management, treatment of abnormal pap tests and abnormal bleeding, and general well-woman care. We are committed to caring for women of all socio-economic, ethnic, racial, and sexual backgrounds. We work with Maternal-Fetal Medicine, Gynecologic Oncology, Urogynecology, and Minimally Invasive Surgery to provide exceptional and tailored care for each patient. Our physicians are available throughout the greater Boston area, including BIDMC, Chelsea, Chestnut Hill, Lexington, Milton, and Needham, as well as the community health centers at Bowdoin Street Health Center, Dimock Center, South Cove Community Health Center, and Fenway Health. Our global health program reaches patients throughout the world.

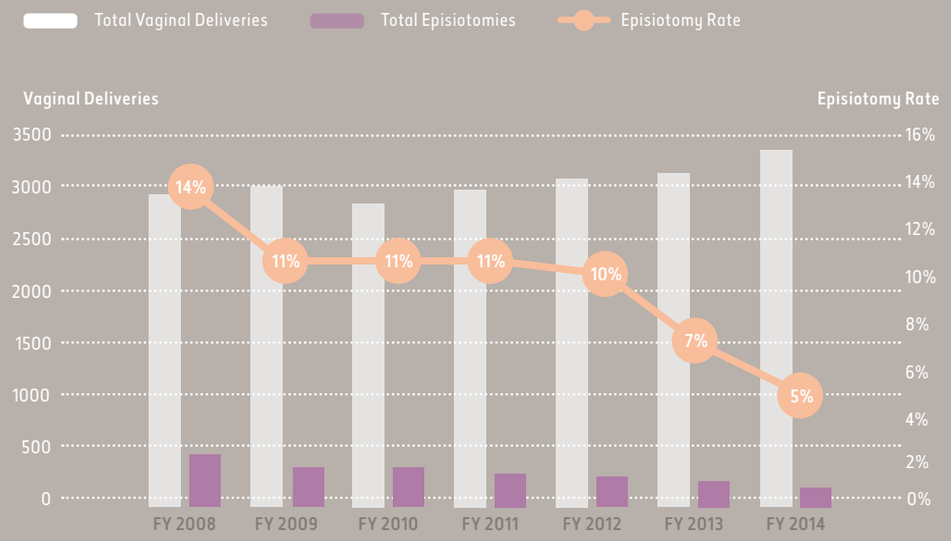
Total Cesarean Deliveries



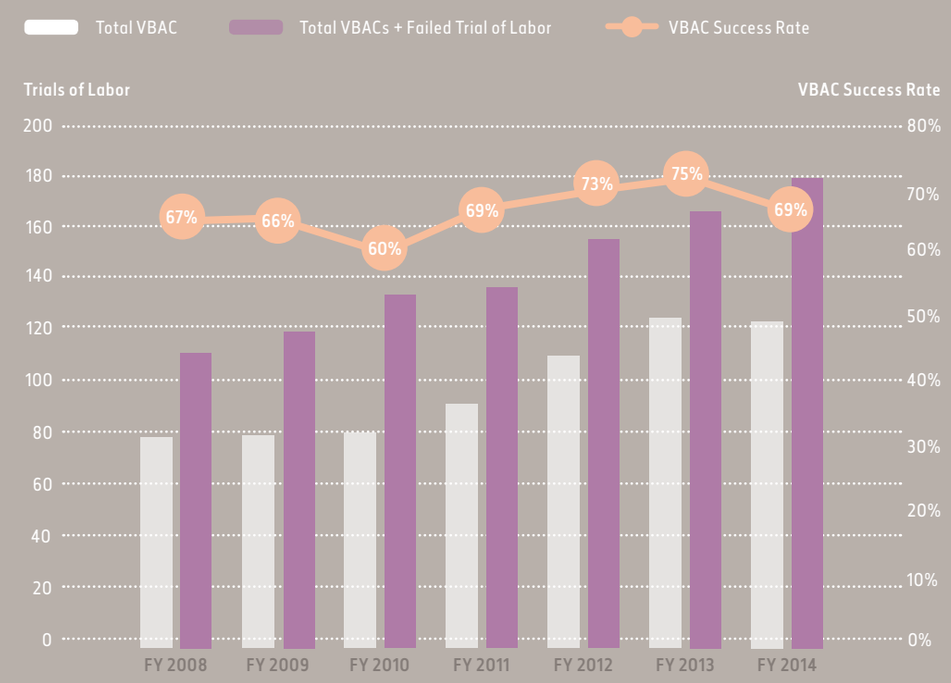
Nulliparous Term Singleton Vertex (NTSV) Deliveries



Episiotomies



Vaginal Birth after Cesarean (VBAC) Success



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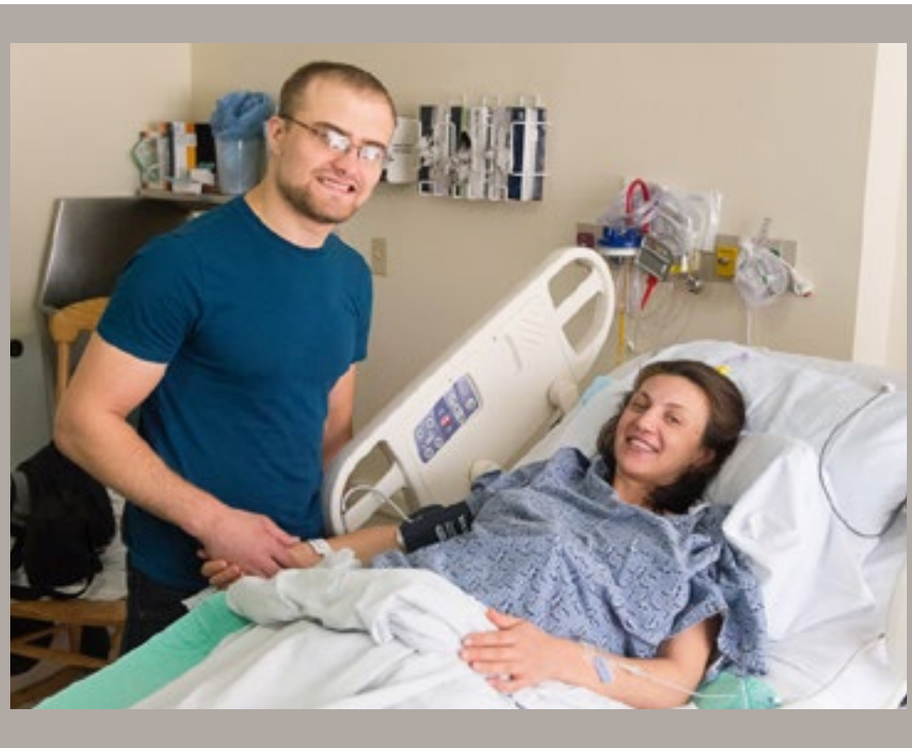

Top: Jen Chu, MD, 2nd Year Resident; Annie Liu, MD, former Resident; Atena Asiaii, MD, MPH , 3rd Year Resident

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Community Health Consortium

Lucy Chie, MD, MPH, *Director*

The Community Health Consortium leads and develops projects in obstetrics and gynecology to address health disparities faced by the Boston area's diverse population. A network of community health centers staffed by our core teaching faculty provides culturally sensitive and patient-centered care for women from a wide range of ethnic and social backgrounds, including the LGBT community. Our centers function as ambulatory sites for resident practice and medical student programs. Healthcare leaders from each center come together quarterly at BIDMC to plan clinical programs, educational endeavors, public health research projects, and community service. A fourth-year Harvard Medical School student elective entitled "OBGYN and Women's Health in Urban Community Settings" is offered to encourage future leaders in community health.

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"Everyone deserves to receive the health care they need to live life to the fullest. We are committed to providing the highest quality of care and access to all women."

• Lucy Chie, MD, MPH

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Global and Community Health Program

Jennifer Scott, MD, MBA, MPH
Director

The Global and Community Health Program integrates global and community health principles to promote a global consciousness of women's health and to foster culturally competent practices in the communities we serve. We are committed to advancing reproductive health care in an equitable, ethical, and dynamic manner, whether in Boston or Sub-Saharan Africa. To that end, we support innovative approaches to global health delivery that engage community partners and build capacity through education and service to community.

Clinical Care

Building on existing collaboration between the BIDMC Department of Medicine and the Botswana Harvard Partnership at Scottish Livingstone Hospital in Molepolole, Botswana, the OBGYN Department is expanding its contributions. This unique program will be comprised of a full-time OBGYN faculty physician based at Scottish Livingstone Hospital to deliver clinical care, provide medical education, and supervise OBGYN residents. These residents will have the opportunity to engage in service-based learning and projects, including supervised clinical electives and quality improvement projects.

We also contribute to the dialogue on global health delivery and policy through engagement in various Harvard-based committees and national and international organizations, including American Congress of Obstetricians and Gynecologists, International Federation of Gynecology and Obstetrics, and the World Health Organization.

Top: Olivia Chang, MD, MPH, 3rd Year Resident, with colleagues in Scottish Livingstone Hospital, Molepolole, Botswana
Bottom: Ntebo Ramotshabi, Medical Officer at Scottish Livingstone Hospital

Interdepartmental clinical, research and educational initiatives at BIDMC include:

- Urology and OBGYN clinical collaboration to provide urogynecologic care in Cape Verde.
- Oncology and OBGYN research collaboration to improve cervical cancer screening in Zimbabwe.
- Anesthesia and OBGYN educational collaboration in China to advance training in labor anesthesia.

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Clinical Care, *continued*

We encourage faculty, staff, and students to participate in service-based projects, research, and educational initiatives in collaboration with local and international partners. Residents may also choose to conduct their longitudinal clinics in Boston's medically underserved communities at health centers such as Bowdoin Street Health Center, BIDMC Chelsea, and South Cove Community Health Center. We encourage residents to contribute their second- and third-year elective time toward these initiatives. The department, the hospital and the broader community at Harvard Medical School and Harvard T.H. Chan School of Public Health offer additional opportunities, including:

- Ambulatory clinical rotation for first-year residents.
- Longitudinal clinics at one of the affiliated health centers.
- Development of educational curricula and outreach for the community health center setting.
- OBGYN Department global and community health curriculum.
- Hospital-wide global health curriculum and journal club.
- BIDMC Global Health Residency track: first-year residents may apply for the hospital-wide residency track, a three-year program comprised of a mentored global health project, global health delivery course, and longitudinal curriculum.
- All OBGYN residents receive mentorship, cross-disciplinary collaboration, and other support to pursue global and community health projects.

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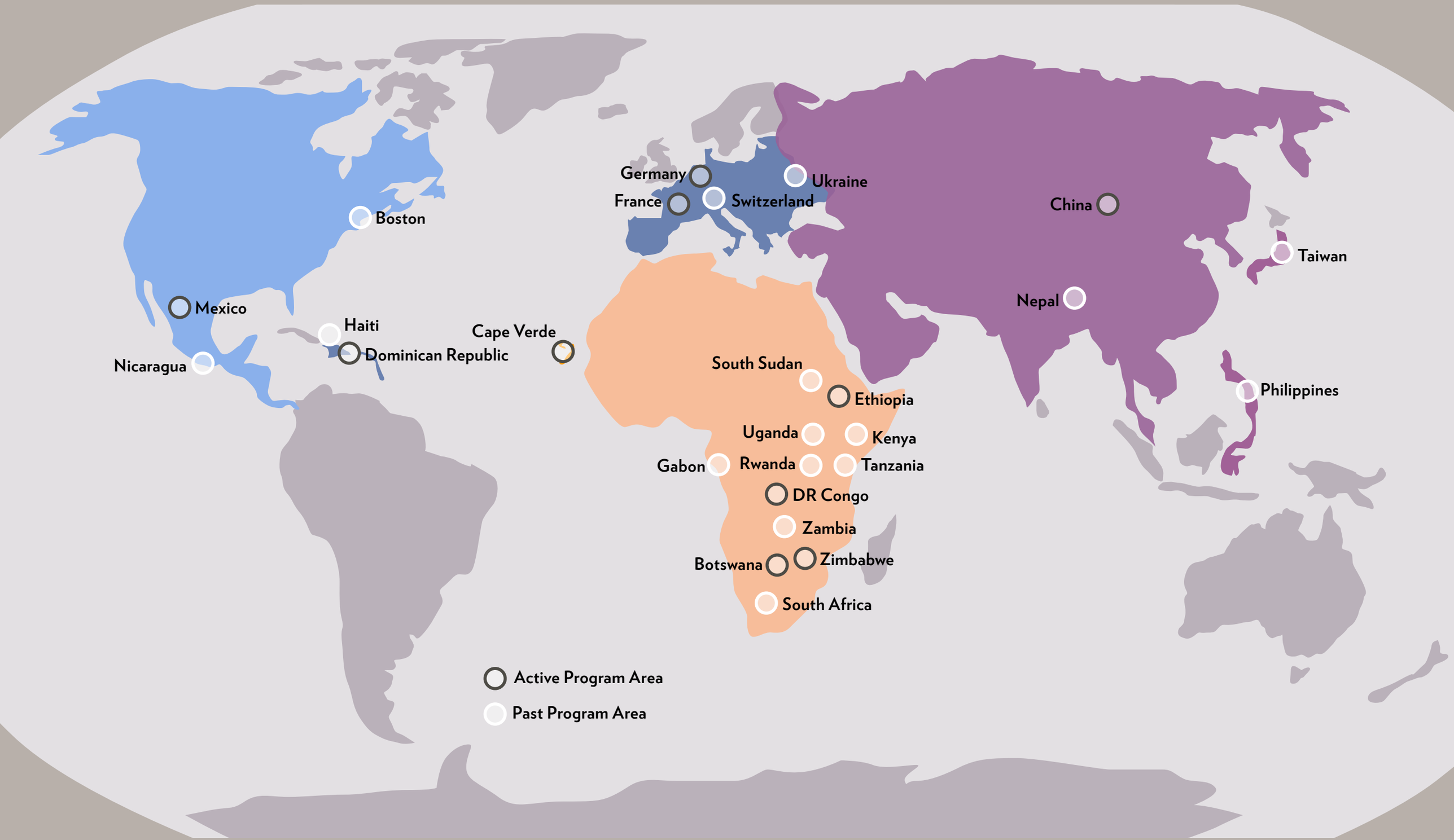
Global Women's Health Program Areas of Activity



Global Health Program

Research

The OBGYN Department is dedicated to advancing reproductive health care and human rights through its progressive global health research initiatives. A full-time OBGYN faculty member leads research on gender-based violence in humanitarian settings and psychosocial factors, with a focus on violence-related stigma and resilience in the context of trauma. Our OBGYN faculty and residents apply rigorous research methodologies to advance global women's health and address health care disparities. Research initiatives build on prior and existing collaborations in a number of countries, including: Haiti, Democratic Republic of Congo, Kenya, Ethiopia, and Tanzania.

Scottish Livingstone Hospital, Molepolole, Botswana

Global Health Program, *continued*

Launched four years ago by the Department of Medicine, the BIDMC-Botswana program has enabled more than 30 internal medicine residents in the past academic year to complete clinical electives at Scottish Livingstone Hospital. In 2015, OBGYN residents Olivia Chang and Katherine Johnson joined them to help expand the program into SLH's OBGYN wards.

In addition to caring for patients, Chang and Johnson worked on quality improvement and partnered with the obstetrics team to improve the management of obstetric hypertensive emergencies. After completing her three-week rotation at SLH, Chang shared a story that she felt encompasses "the reality and beauty of working in Botswana at SLH."

Here are excerpts from her journal entry about meeting "Mama."*

A Sweet Surprise

I first saw Mama coming down the hallway of the Antenatal Care Unit. She appeared older, but fit, as she wobbled down the hallway with a large handheld suitcase and another bag full of groceries. I remembered thinking that she could not have been in labor, as I have not seen many women porter their own luggage while enduring labor pains.

We assigned her Bed 2, out of an enclave of 10 beds for women all in the latent phase, or early, labor. She tucked her suitcase underneath her bed, and placed her bag in the small cabinet provided for patients. This is certainly not her first baby, I thought, as she seemed to know the routine too well. Before she sat down on her bed, she retrieved her prenatal book from her bag, and while doing so, she appeared to have a contraction as the line between her brows seemed to furrow just softly.

Ntebo Ramotshabi, Medical Officer at Scottish Livingstone Hospital; Katherine Johnson, MD, Chief Resident

I introduced myself as the Ngaka, or the doctor, in Setswana. She smiled and said, "What is your first name?" I replied, "Olivia." She appeared at ease, and I was not convinced that she was in labor.

"Ngaka, keep me here on the antenatal unit," she said. "This is my fifth baby, and I know that I will have my baby tomorrow."

The next day, Mama was pacing up and down the hallways of Antenatal Care Unit; in a hospital where routine epidurals are not offered, the best way to endure contractions is by walking and chit-chatting with other pregnant women in the social room. All day, I found her giggling with the woman in Bed 6, holding her gravid uterus in pain, and then quickly sharing an orange with the woman in Bed 1 before her next contraction came. In the afternoon I performed a vaginal exam, which confirmed that she was in active labor.

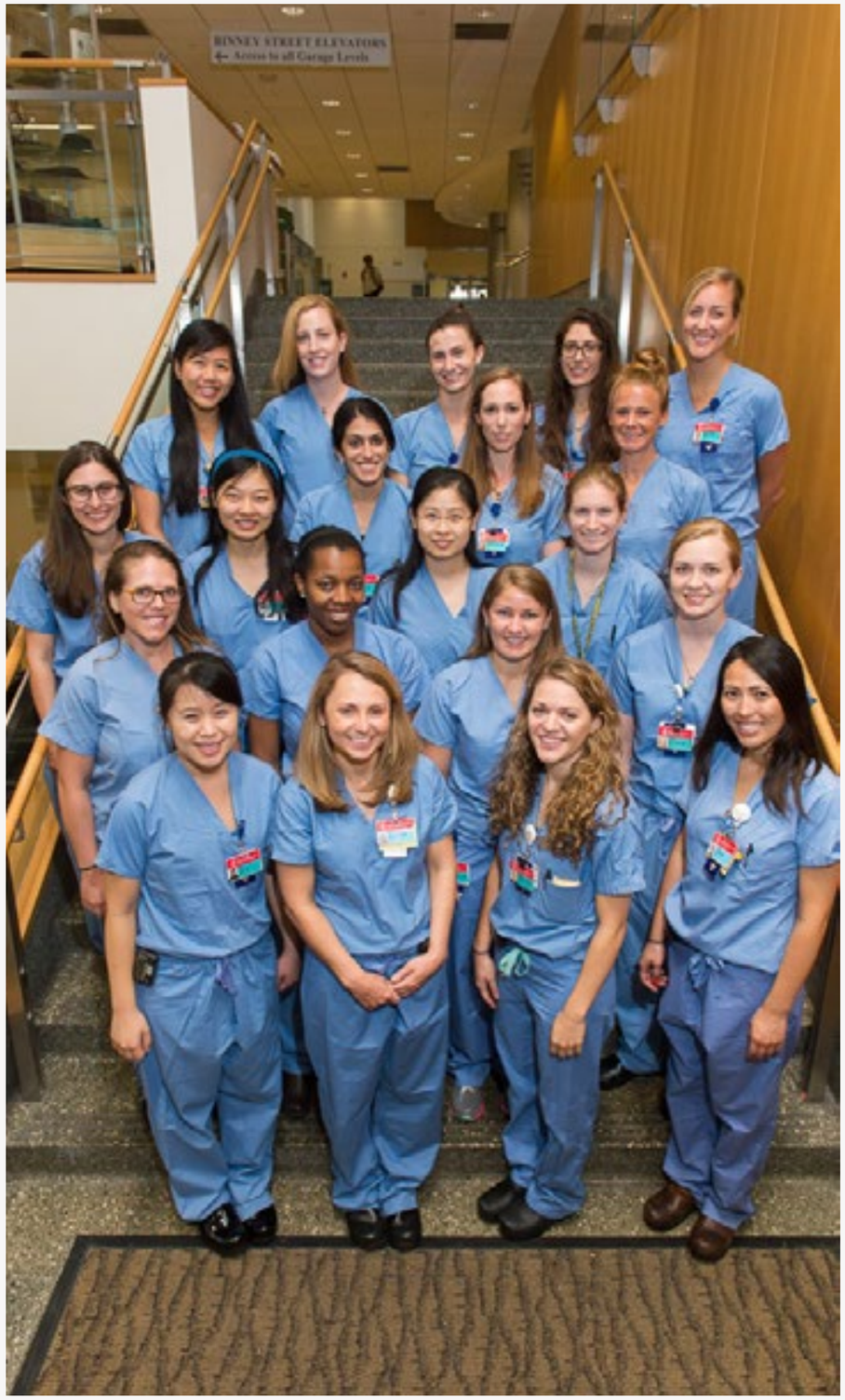
"Mama, let's go to the Labor Ward," I told her. "You're going to have your baby!" She laughed and gave me an "I-told-you-so" look as she packed up her suitcase and her bag. While at Labor and Delivery, I never heard her from behind the curtained area except for an occasional rustle of the bedsheets – as if to remind the medical staff that she was there. Every time that I checked in on her, she gave me a genuine smile and a "Thank you, Ngaka" in between her painful contractions.

Mama delivered shortly after my work shift ended. I saw her again the next morning on the Postpartum Unit with a beautiful little girl in her arms. It was three days after we had first met.

"Ngaka!" she called out to me.
"Come meet my baby Olivia!"

Olivia Chang, MD, MPH, 3rd Year Resident, with patient in Botswana

*"Mama" is an affectionate term used for pregnant women and mothers in Botswana. It's also used here to respect the patient's anonymity.



Current OBGYN Residents, Academic Year 2015-2016

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Obstetrics and Gynecology: Education

Residency Program

Monica Mendiola, MD
Residency Program Director

Brianne Mahoney, MD
Assistant Residency Program Director

Yvonne Gomez-Carrion, MD
Director of the Resident Surgical Practice

Ronald Marcus, MD
Co-Director of the Resident Ambulatory Practice

Mary Herlihy, MD
Co-Director of the Resident Ambulatory Practice

Martina DiNapoli
Residency Program Coordinator

Malcolm Mackenzie, MD
Medical Student Assistant Clerkship Director

Celeste Royce, MD
Medical Student Associate Clerkship Director

L. Renata Vicari
Medical Student Clerkship Coordinator

Nestled in the Longwood Medical Center, BIDMC's Department of OBGYN has burgeoned into a leading training center for Harvard Medical School.

Patient care is the foundation for resident and medical student training in BIDMC's Department of OBGYN. Residents spend all four years of their training working with faculty in both ambulatory and in-patient settings so that they are well-prepared upon graduation to work independently in general practice. Ambulatory settings include hospital-based practices, suburban settings, and affiliated community health centers, all providing diverse patient care experiences, exposure to faculty with a variety of interests and expertise, and a lifetime of options for contributing to the education of patients and service to community.

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Our residency program provides world-class training in its ambulatory clinic, a state-of-the-art arena for minimally invasive and robotic surgery, and a tertiary obstetrical care setting serving more than 5,000 patients each year. To keep up with the acuity of our patient care network, the program has grown from five to six residents annually.

The department remains focused on maintaining a uniquely individualized approach to training, with early exposure to the subspecialty areas. Residents work one-on-one with academic generalist faculty, as well as with faculty in all subspecialty areas:

- Maternal-fetal medicine.
- Gynecologic oncology.
- Female pelvic medicine and reconstructive surgery.
- Reproductive endocrinology and infertility.
- Family planning.
- Minimally invasive gynecologic surgery.

Two distinct advantages we offer to residents is the opportunity to work in community health centers in Boston neighborhoods and to explore global health issues through the BIDMC Global and Community Health Program. We take great pride in training our residents to pursue excellence, always with respect for diversity and with empathy for the individual patient and family experience.

The department stresses quality and safety, team training, system-based practices, and the importance of residents as teachers. Among the teaching techniques are a robust Resident-as-Teacher curriculum along with simulation exercises for team training, obstetrical emergencies, and laparoscopic surgery. Faculty mentor and support the resident through a required research project, assisting with design, data collection, statistical analysis, manuscript preparation, and the institutional review board process. Residents have two months of elective time to pursue scholarly work, with funding for project expenses and travel.

The faculty and residents select two co-administrative chief residents who reflect the highest level of professionalism, clinical excellence, leadership, and interpersonal skills needed to lead the program. They serve as liaisons to the faculty and help maintain and develop an innovative curriculum.

OBGYN Grand Rounds

Current Residents: Academic Year 2015–2016

Chief Residents: Class of 2016
Katherine Armstrong, MD
Katherine Johnson, MD
Zoe McKee, MD
Bri Anne McKeon, MD
Sara Won, MD

PGY3: Class of 2017
Atena Asiaii, MD, MPH
Erin Brooks, MD, MPH
Olivia Chang, MD, MPH
Jessica Kuperstock, MD
Kari Plewniak, MD
Elizabeth Roberts, MD

PGY2: Class of 2018
Jennifer Chu, MD
Kristin Gerson, MD, PhD
Sarah Lambeth, MD
Michelle Lightfoot, MD, MPH
Tariro Mupombwa, MD
Emily Willner, MD

PGY1: Class of 2019
Catherine Gordon, MD
Eva Luo, MD, MBA
Sara McKinney, MD
Catherine Nosal, MD
Nisha Verma, MD
Rui Wang, MD

Where Are They Now? Class of 2015

Margaret Chory, MD
OBGYN Generalist
Magee Women's Hospital
Pittsburgh, PA

Emily Holden, MD
Fellow in Reproductive Endocrinology and Infertility
Rutgers New Jersey Medical School
Newark, NJ

Yetunde Ibrahim, MD
Research
Boston, MA

Annie Liu, MD
Fellow in Gynecologic Oncology
University of California at Los Angeles
Los Angeles, CA

Nandini Raghuraman, MD, MS
Fellow in Maternal-Fetal Medicine
Washington University in St. Louis
St. Louis, MO

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Huma Farid, MD, OBGYN Faculty

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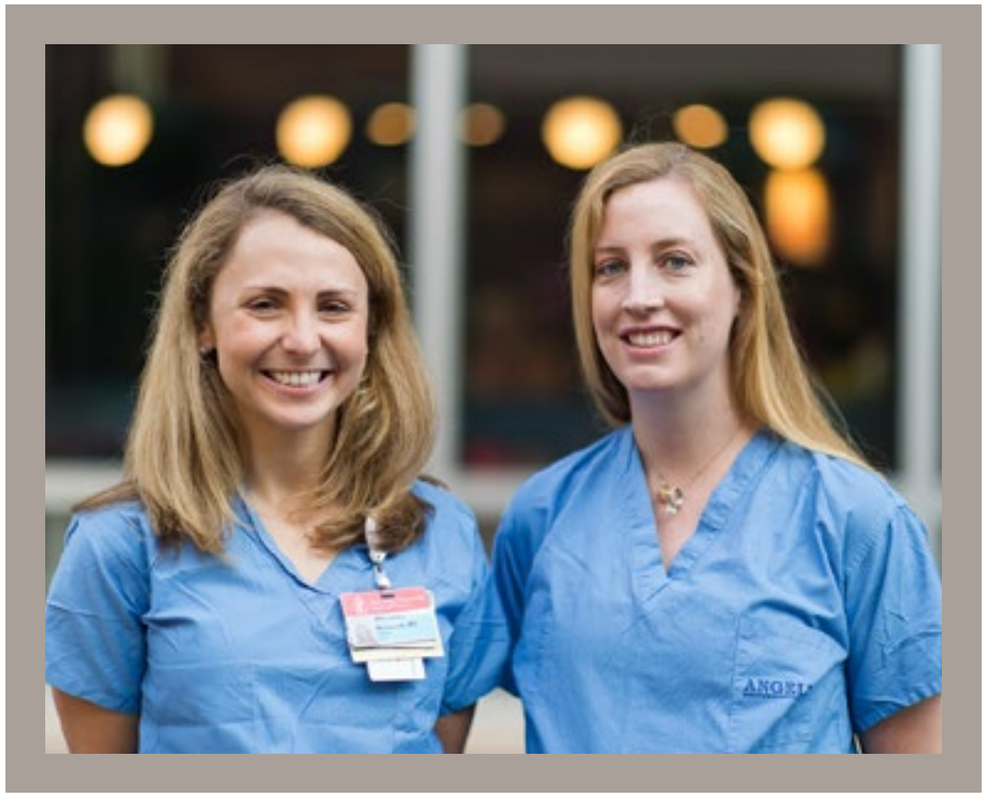

Bri Anne McKeon, MD and Katherine Armstrong, MD, Co-administrative Chief Residents

“The Obstetrics and Gynecology Residency Program at BIDMC provides exceptional clinical and surgical training in a collegial, collaborative environment that is focused on individual growth and mentorship. The combination of patient-centered care, resident education and cutting-edge research gives us a comprehensive foundation for a life-long rewarding career.”

• Bri Anne McKeon MD, Co-administrative Chief Resident

“BIDMC provides an ideal environment for rigorous clinical and surgical training, as well as effective development of independent research in an academic setting. The faculty takes such a personal interest in our clinical education, and have become friends and mentors that I will carry with me throughout my career.”

• Katherine Armstrong, MD, Co-administrative Chief Resident

From left: Celeste Royce, MD, Medical Student Associate Clerkship Director; L. Renata Vicari, Medical Student Clerkship Coordinator; Malcolm Mackenzie, MD, Medical Student Assistant Clerkship Director; Martina DiNapoli, Residency Program Coordinator; Katharyn Meredith Atkins, MD, Director of Undergraduate Medical Education and the Principal Clinical Experience at Harvard Medical School; Siripanth Nippita, MD, Family Planning Faculty.

Undergraduate Medical Education

The Harvard Medical School OBGYN Core Clerkship Program at BIDMC exposes third-year students to the depth and breadth of experiences that occur in women's reproductive healthcare delivery. Our goals are to provide wide-ranging opportunities to develop and refine clinical reasoning and procedural skills and to promote awareness and understanding of cultural differences in women's health and reproductive care. We want students to understand their role within a healthcare team and the value of systems of care while fostering active, self-directed learning. We encourage students to read patient histories before providing care, helping them to reflect upon and understand our responsibility as caregivers.

Students rotate on teams caring for patients in Labor and Delivery, in the postpartum units and in the gynecology inpatient service. OBGYN generalists volunteer to be the Teaching Attending of the Day and help students learn about the care of women during labor and delivery. Each student is paired with an OBGYN generalist core preceptor and attends weekly ambulatory sessions designed to promote continuity in patient care and education.

In addition to grand rounds and resident-run sessions on each service, faculty and senior residents/fellows lead two to three hours each week of didactic sessions. Multidisciplinary conferences with Psychiatry and Radiology integrate these specialties into student learning. Skills are developed through additional sessions on physical examinations, suturing, placing IUDs, and knot-tying.

Undergraduate Medical Education, *continued*

Fourth-year Harvard Medical School students and selected students from outside institutions may take these advanced electives:

Obstetrics
Toni Golen, MD
Vice Chair, Quality, Safety and Performance Improvement

Gynecology Oncology
Chris Awtrey, MD
Division Director, Gynecologic Oncology

Women's Health in Urban Community Settings
Lucy Chie, MD, MPH
Director, Community Health Consortium

Reproductive Endocrinology and Infertility
Kim Thornton, MD
Division Director, Reproductive Endocrinology and Infertility

Female Pelvic Medicine and Reconstructive Surgery
Roger Lefevre, MD
Female Pelvic Medicine and Reconstructive Surgery Faculty

OBGYN Residency Boot Camp
Celeste Royce, MD
Associate Clerkship Director
Co-Director of Resident Ambulatory Practice

Our most recent addition to the curriculum is a fourth-year intensive preparatory course for students who have matched into an OBGYN Residency. "Boot Camp," as it is known, uses a combination of learning techniques, including immersive experiences in the Carl J. Shapiro Simulation Center. The course prepares students for internship and residency, allowing graduates to enter residency at or above level 1 of the ACGME's Milestone Project.

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Top: Monica Mendiola, MD, OBGYN faculty, Hope Ricciotti, MD, Chair, and Martina DiNapoli, Residency Program Coordinator with Residents. Bottom: Brett Young, Maternal-Fetal Medicine Faculty, conducting simulation training.

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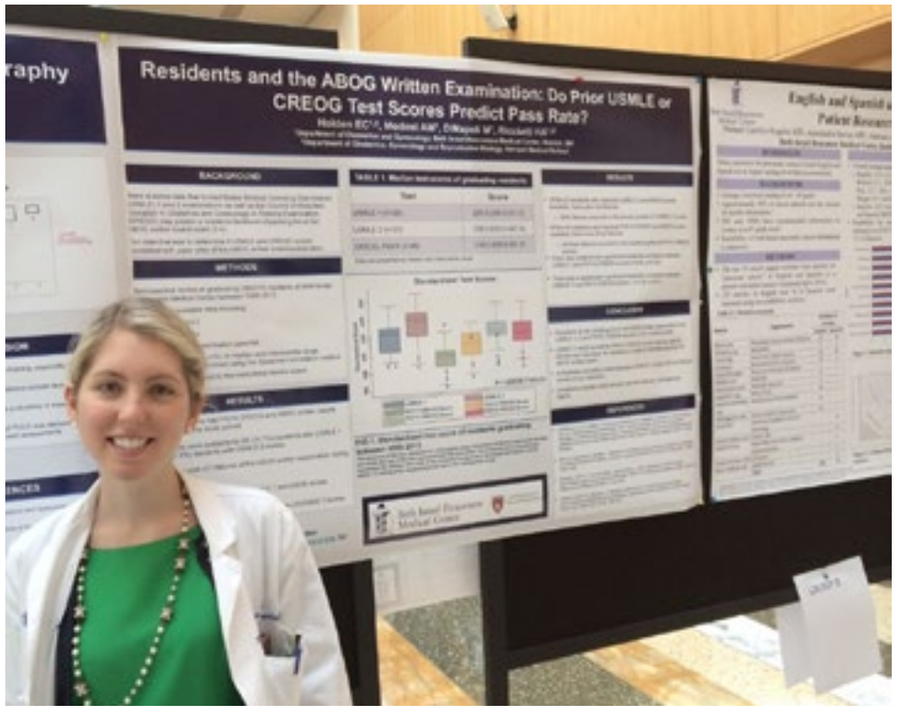

Emily Holden, MD, Resident Class of 2015

Educational Research

The department conducts educational research projects through simulation, virtual patients, standardized patients, and innovative techniques in medical education. Simulation projects include evaluation of a novel laparoscopic simulator developed by Dr. Christopher Awtrey to train residents in pelvic surgery suturing skills, as well as educational studies led by Dr. Hye-Chun Hur to evaluate the role of simulation teaching and assessment for gynecologic surgical training. Additional areas of study include traditional laparoscopic suturing, electrosurgery, and robotic surgery. In addition, Dr. Hope Ricciotti developed a normal pregnancy virtual patient, which was evaluated in a randomized controlled study of Harvard medical students, and leads the Resident-as-Teacher Program, in collaboration with Dr. Katharyn Meredith Atkins. This effort uses videotaped, simulated medical student teaching encounters to train residents, with immediate faculty feedback and self-reflection. Dr. Toni Golen has recently completed a grant-funded study of the effectiveness of a new curriculum for teaching quality improvement, and leads efforts to study simulation training for rare but critical obstetrical events.

Under the leadership of Dr. Maureen Paul, the Division of Family Planning is evaluating whether team training at Planned Parenthood affiliates throughout the United States affects quality and safety measures such as adverse outcomes, patient satisfaction, and staff perceptions. The division is also conducting two research studies to evaluate the use of a mobile, high-fidelity simulator to teach insertion of intrauterine contraception.

The department's commitment to educational research reflects our emphasis on innovation and scientific discovery in the evolving world of undergraduate and graduate medical education.

MATERNAL-FETAL MEDICINE/ HIGH-RISK OBSTETRICS AND CLINICAL GENETICS

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Clinical Care

Steven J. Ralston, MD, MPH
Division Director

Faculty
Achilles Athanassiou, MD
Millie Anne Ferrés, MD
Barbara M. O'Brien, MD
Karen O'Brien, MD
Brett C. Young, MD

Affiliated Faculty
Ananth Karumanchi, MD, PhD

Clinical Faculty
Deborah Platek, MD
Mary Vadnais, MD, MPH

Patients from all over New England are referred to BIDMC for high-risk obstetrical care. Maternal-Fetal Medicine faculty offer targeted and specialized ultrasound examinations, prenatal diagnosis, and genetic counseling at BIDMC, as well as other healthcare facilities throughout Massachusetts. We foster a close and productive relationship with community-based generalists, family practitioners, and midwives, providing outstanding care in a manner that is also convenient for our patients.

Our maternal transport program supports hospitals throughout New England and has transported patients from as far away as Bermuda. Last year, 273 women were transported by ambulance, helicopter, or plane to BIDMC's Labor and Delivery Unit for acute care. The majority of cases require Maternal-Fetal Medicine services or Level III neonatal intensive care. Our faculty collaborate with programs such as the Advanced Fetal Care Center at Boston Children's Hospital; this association allows diverse diagnostic and treatment options, including invasive antenatal and peri-partum procedures. These clinical advances help fetuses affected by congenital abnormalities while offering hope and guidance to families.

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Our two newest faculty members, Dr. Millie Anne Ferrés and Dr. Barbara O'Brien, are trained in both maternal-fetal medicine and clinical genetics. Their presence in the division, along with our three genetic counselors and BIDMC's new clinical cytogenetics laboratory, allow for thorough and timely evaluation of women and families at risk for genetic disease, birth defects, or intellectual disability. Counseling is also available for individuals or couples experiencing infertility or recurrent pregnancy loss. The program's staff meet with families to discuss individual concerns, provide risk assessments, and help them decide whether to undergo additional testing.

New Clinical Programs

The division launched a Center of Excellence for women with abnormal placentation: The New England Center for Placental Disorders, co-directed by Dr. Steven J. Ralston and Dr. Scott Shainker. Patients across New England are evaluated by the Center for possible placental pathology and, if confirmed, a care plan is developed with an interdisciplinary team of medical and surgical subspecialists.

The Division has also joined in collaboration with the Division of Hematology to form a prenatal clinic for women with blood disorders led by Dr. Brett Young. Finally, we have joined forces with the Joslin Diabetes Center to form the Diabetes in Pregnancy Program under the direction of Dr. Karen O'Brien.

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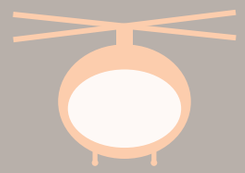
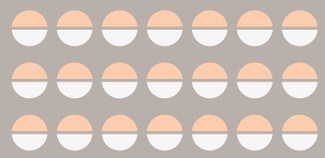
Barbara M. O'Brien, MD, Maternal-Fetal Medicine Faculty, with patient

Last year, 273 women were transported to BIDMC's Labor and Delivery Unit by ambulance, plane, or helicopter for acute care.



273

8700



In the past year, the division consulted with more than 8,700 women and families at risk for having complicated pregnancies.

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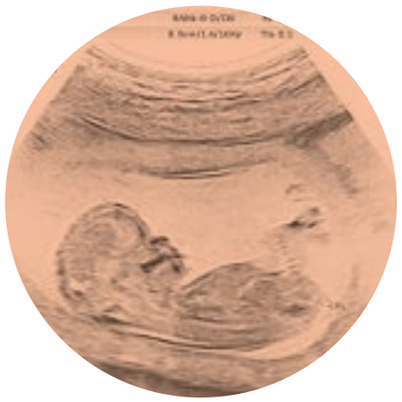

The Division of Maternal-Fetal Medicine provided more than 35,000 ultrasound examinations last year.

Prenatal Diagnosis

The Division of Maternal-Fetal Medicine provides obstetrical ultrasound and consultation for pregnancies at risk for fetal abnormalities and adverse outcomes. Patients receive state-of-the-art diagnostic care with 2D, 3D, and 4D capabilities. Diagnostic procedures include chorionic villus sampling and amniocentesis, as well as therapeutic procedures such as fetal blood transfusions and shunting. The Center for Maternal-Fetal Medicine at BIDMC also includes an antenatal testing unit for all pregnancies. In the past year, the division consulted with more than 8,700 women and families at risk for having complicated pregnancies.

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Top: (from left) Melissa Spiel, DO, 2nd Year Maternal-Medicine Fellow; Steven Ralston, MD, MPH, Maternal-Fetal Medicine Division Director; Mary Vadnais, MD, MPH, Maternal-Fetal Medicine Faculty; Brett Young, MD, Maternal-Fetal Medicine Faculty

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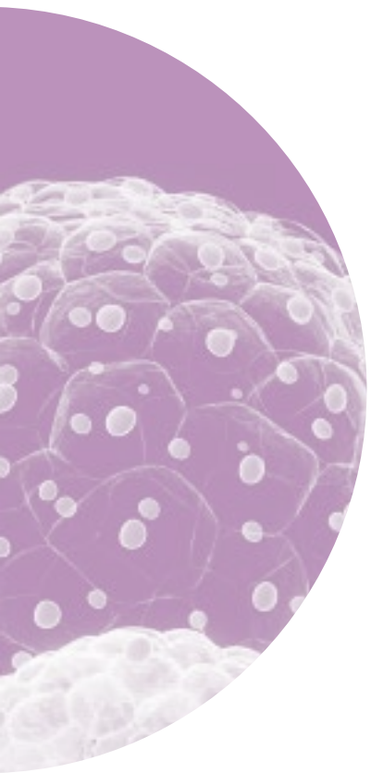

Education

Steven J. Ralston, MD, MPH

Fellowship Director

Fellows, residents, medical students, and attending staff all benefit from the comprehensive educational environment found in the Division of Maternal-Fetal Medicine and Clinical Genetics. A high-risk obstetrical chief resident and a junior-level resident work alongside Maternal-Fetal Medicine fellows and attending physicians on all academic and patient care matters. Frequent clinical exchanges with Anesthesiology, Neonatology, Genetics, Radiology, Nephrology, Endocrinology, and Hematology are all part of the experience. Faculty and fellows staff morning sign-out on Labor and Delivery, and the division sponsors a weekly multidisciplinary Perinatal Conference to educate residents and fellows on the treatment of women with challenging obstetrical issues. Teaching in the clinical setting is supplemented by bimonthly resident didactic series presentations.

The Maternal-Fetal Medicine Fellowship is a three-year clinical and research training program approved by the American Board of Obstetrics and Gynecology. The fellowship is reviewed intermittently by ABOG and was recently reaccredited. During their training, fellows spend 12 months on clinical rotations, 12 months on research, and 12 months of additional clinical time on electives and subspecialty exploration. A mentoring team guides each fellow according to individual goals and interests. We offer excellent basic science and clinical research opportunities, as well as extensive clinical experience in high-risk obstetrics, prenatal genetics, sonography, and ultrasound-guided procedures. Fellows complete all of the ABOG requirements to obtain subspecialty board certification.

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Maternal-Fetal Medicine Fellowship

Current Fellows Academic Year 2015–2016

Ai-ris Collier, MD

Bethany Mulla, MD

Scott Shainker, DO

Melissa Spiel, DO

Program Graduates: Where Are They Now?

2015

Kedak Baltajian, MD
Doctors Hospital at Renaissance
Edinburg, TX

2014

Melissa March, MD
Faculty member,
Case Western Reserve University
Cleveland, OH

Program Graduates: Where Are They Now?

2013

William Schnettler, MD
Faculty member, TriHealth
Cincinnati, OH

2012

Michele Silasi, MD
Faculty member,
Yale–New Haven Hospital
New Haven, CT

2011

Mary Vadnais, MD, MPH
Staff Perinatologist,
Harvard Vanguard
Medical Associates
Boston, MA

Kedak Baltajian, MD, 2015 Maternal-Fetal Medicine Fellowship Graduate; Melissa Spiel, DO, 2nd Year Maternal-Fetal Medicine Fellow; Scott Shainker, DO, 3rd Year Maternal-Fetal Medicine Fellow

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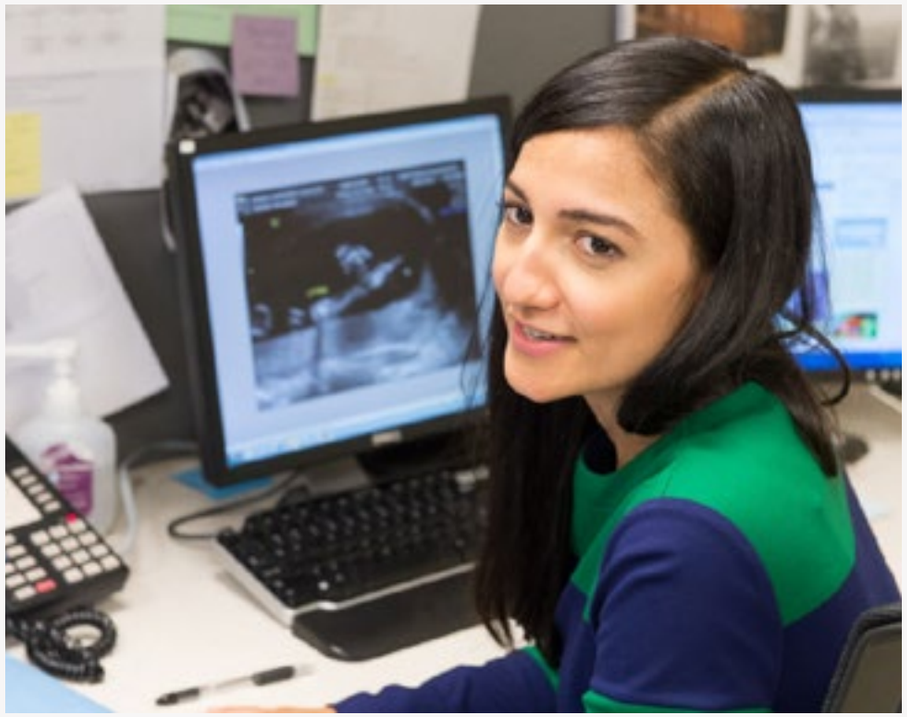

Millie Anne Ferrés, MD, Maternal-Fetal Medicine Faculty

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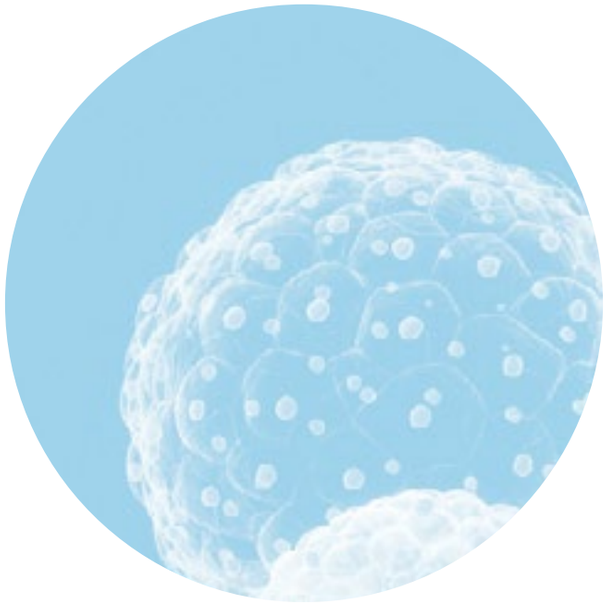

Research

Joint research with BIDMC's Department of Medicine has helped diagnose and treat preeclampsia—a disease that complicates 5% of pregnancies worldwide and is a cause of maternal and fetal mortality. Researchers first found that sFlt-1, a molecule that occurs naturally in the placenta, may cause preeclampsia when it is overabundant. In collaboration with the Hospital for Sick Children in Toronto, researchers discovered that, when sFlt-1 combines with a second protein called soluble endoglin, preeclampsia can be life-threatening. Through this work, BIDMC has filed for patents on methods of diagnosing and treating preeclampsia. BIDMC researchers are testing whether these two molecules can be used as biomarkers to help clinicians make a more prompt and accurate diagnosis. Although drug-based therapies for preeclampsia may still be a few years away, researchers are optimistic.

The division also is building a large, longitudinal database of ultrasounds performed in the Center for Maternal-Fetal Medicine. This will be linked with birth outcomes for research projects such as examining the effect of routine cervical length screening, racial and ethnic disparities in cervical length screening, and the clinical utility of limited fetal anatomy ultrasounds for follow-up of incomplete views.

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Steven J. Ralston, MD, MPH, Maternal-Fetal Medicine Division Director

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“Maternal-Fetal Medicine is a subspecialty that demands a high level of technical skill and clinical acumen. But we also need a high degree of empathy to compassionately guide pregnant women to healthy outcomes for themselves and their babies.”

• Steven J. Ralston, MD, MPH, Division Director

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GYNECOLOGIC ONCOLOGY

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Clinical Care

Christopher Awtrey, MD
Division Director

Katharine Esselen, MD
Leslie Garrett, MD
Fong Liu, MD, MPH

Affiliated Faculty
Stephen Cannistra, MD
Director, Gynecologic Medical Oncology

Jonathan Hecht, MD, PhD
Director of Autopsy
Perinatal, Placental,
and Gynecologic Pathology

Medical oncologists, radiation oncologists, and pathologists work with the division's physicians on patient-centered, multidisciplinary teams to provide optimal treatment for women with cancer of the reproductive tract. Therapeutic options include:

- Open surgery (encompassing radical and ultra-radical procedures).
- Minimally invasive surgery.
- Robotic surgery.
- Radiation, chemotherapy.
- Biological therapies.

Clinical outreach programs are in operation at Mount Auburn Hospital, Lawrence General Hospital, Anna Jacques Hospital, and Brockton Hospital.

Clinical trials are open to patients through the Dana-Farber/Harvard Cancer Center. We are also a participating institution of the national Gynecologic Oncology Group, which shares our mission to promote excellence in the quality and integrity of clinical and basic science research in the field of gynecologic malignancies. We work in close collaboration with Dr. Stephen Cannistra, a nationally recognized medical oncologist with particular expertise in ovarian cancer.

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“Our goal in the Division of Gynecologic Oncology is to provide compassionate, individualized care of the highest quality to all patients with a suspected or diagnosed gynecologic cancer.”

• Christopher Awtrey, MD
Division Director

Katharine Esselen, MD, Gynecologic Oncology Faculty

Top: Christopher Awtrey, MD, Division Director
Bottom: Gynecologic Oncology group meeting

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Education

During their rotation in the Division of Gynecologic Oncology, residents experience the full breadth of oncological care along with third-year medical students and fourth-year sub-interns. In a unique academic environment, residents discuss each patient's clinical course and treatment options at a weekly Gynecologic Oncology Tumor Board—a multidisciplinary conference attended by division members, as well as pathologists, radiologists, medical oncologists, and radiation therapists. A gynecologic oncology journal club and monthly research meetings are also among the sponsored activities.

Resident responsibilities include daily rounds, assisting in surgical procedures, and presenting at Tumor Board. Residents participate in genetic cancer counseling sessions and medical chemotherapy ambulatory management. Clinical education also includes simulated surgical practice and participation in the colposcopy/laser ambulatory clinics. There, they are taught the principles of colposcopy and the place of laser surgery in gynecology; they graduate with certification in laser surgery. Almost every class over the past decade has had one graduate continue training in a Gynecologic Oncology Fellowship—a testament to the division's curriculum.

Research

Current projects include a comparison of adnexal surgery outcomes among women with and without a prior hysterectomy. Other research is investigating uterine and cervical surgical procedures following risk-reducing bilateral salpingo-oophorectomy. In addition, the division operates a research program under the direction of Dr. Stephen Cannistra, Director of Gynecologic Medical Oncology. Among the projects are: an investigation into the role of microarrays in predicting response to chemotherapy for patients with ovarian cancer, and clinical trials examining the role of new therapies for such patients. Perhaps most exciting is the study of new biologic therapies for advanced ovarian cancer. Many of the clinical trials are open through the collaborative efforts of the institutions comprising the Dana-Farber/Harvard Cancer Center, of which BIDMC is a founding member. The program also maintains an IRB-approved tumor bank for use in basic science investigations in ovarian cancer.

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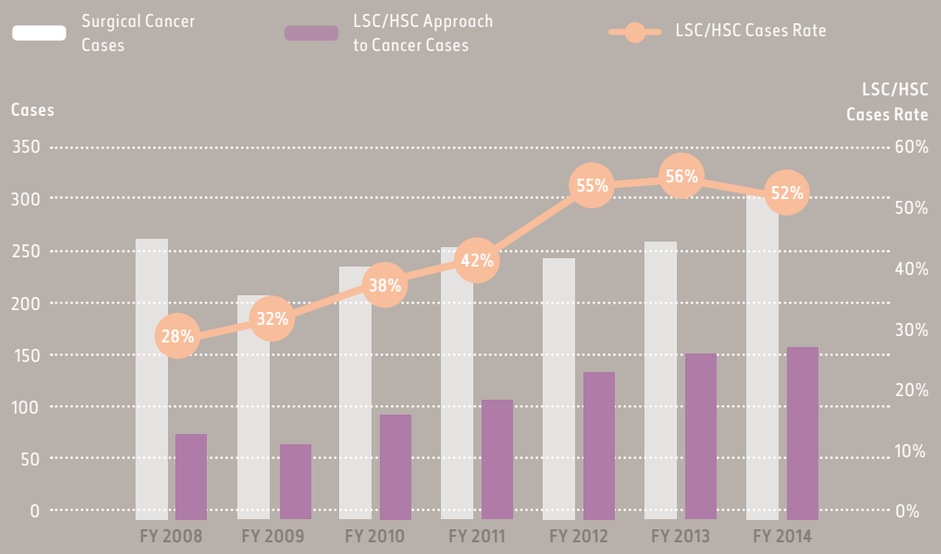
Surgical Approach for GYN Cancer



LSC/HSC - Laparoscopy and Hysteroscopy

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From left: Christopher Awtrey, Division Director; Fong Liu, MD, MPH, Gynecologic Oncology Faculty; Kate Nolan, NP, Gynecologic Oncology Provider; Katharine Esselen, MD, Gynecologic Oncology Faculty; Leslie Garrett, MD, Gynecologic Oncology Faculty

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COLPOSCOPY AND LOWER GENITAL TRACT DISORDERS

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Elizabeth Buechler, MD
Clinical Director

The Colposcopy Clinic is a referral-based clinic for patients with benign and pre-invasive disease involving the vulva, vagina, and cervix. Most patients are referred for the evaluation of abnormal Pap tests, persistent high-risk human papillomavirus tests, or Diethylstilbestrol exposure. In the consult clinic, patients with complicated vulvovaginal symptoms are seen upon referral. When indicated, cervical, vaginal, or vulvar lesions are treated with loop electrosurgical excision procedure or laser, either in the clinic or operating room. Second-year residents initiate their training in colposcopy in this unit, and by graduation they have the skills and training to obtain laser certification.

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FAMILY PLANNING

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Clinical Care

Maureen Paul, MD, MPH
Division Director

Siripanth Nippita, MD, MS
Phillip Stubblefield, MD
Boris Orkin, MD

The Division of Family Planning offers comprehensive, safe, and confidential reproductive healthcare services under the supervision of nationally renowned family planning faculty.

We offer:

- Pregnancy-options counseling.
- Early medical abortion.
- First- and second-trimester surgical abortion.
- Comprehensive contraception counseling and provision.
- Management of early pregnancy loss.

The division receives referrals from providers both within the BIDMC network and throughout New England. Our clinic offers patients the full range of contraceptive options and caters to women with complex medical or psychosocial conditions. We provide abortion procedures in our outpatient clinics using local anesthesia and mild sedation, or in the operating room using moderate or deep sedation. Residents participate in all aspects of BIDMC's family planning service, and they also benefit from off-site experiences at Women's Health Services and the Dimock Center, which expose residents to ways family planning services are delivered to heterogeneous populations.

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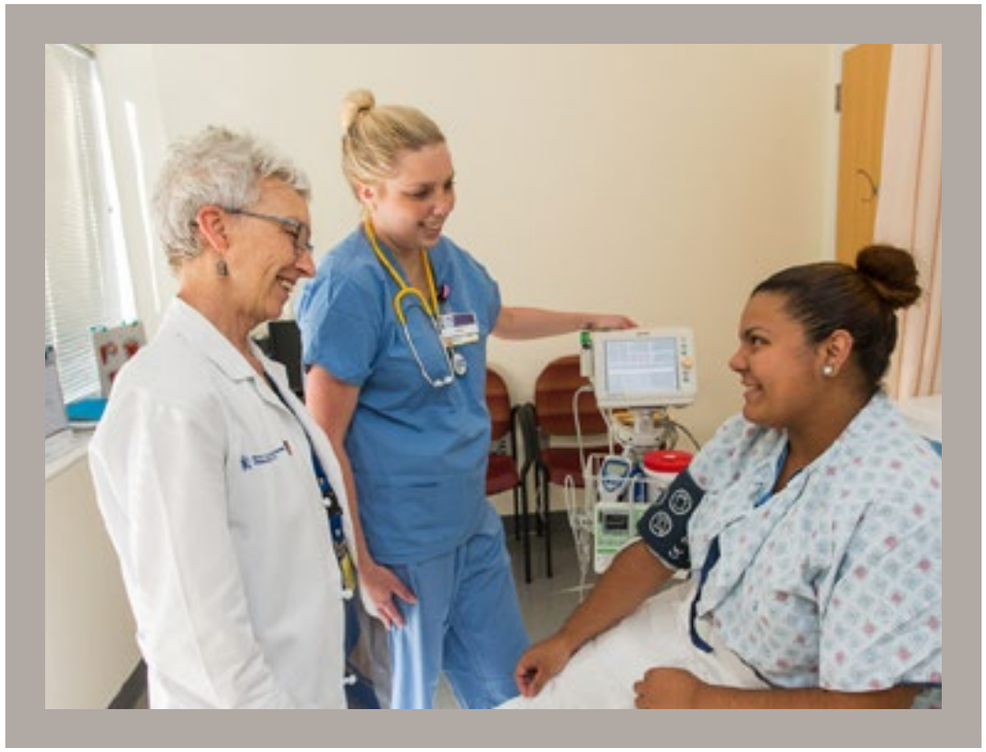
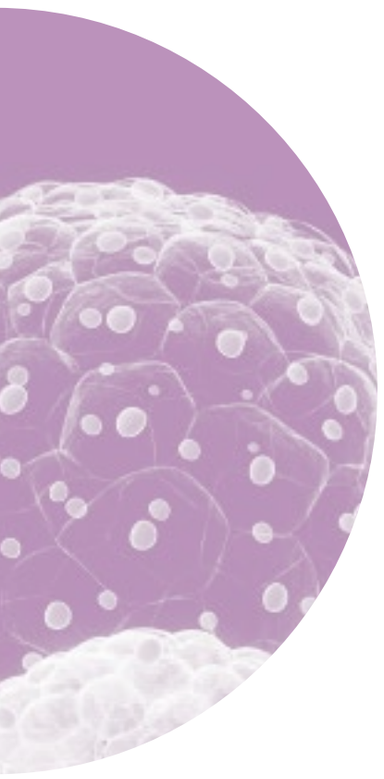
“Deciding whether and when to have children is one of the most important decisions that women and families make in life. We are here to help.”

• Maureen Paul, MD, MPH, Division Director



Maureen Paul, MD, MPH, Division Director, and Hannah Redmond, Medical Assistant, with patient



Education

The Division of Family Planning offers a dedicated, 10-week rotation for first- and second-year OBGYN residents as part of the national Kenneth J. Ryan Residency Training Program. Residents learn to provide all methods of contraception and to address the family planning needs of women with complex medical conditions. Residents may perform ambulatory procedures including manual vacuum aspiration, dilation and evacuation, medical abortion, and intrauterine device and contraceptive implant insertions. In keeping with BIDMC's partnership program, we also offer family medicine residents from Cambridge Health Alliance a two-week rotation in contraception and first-trimester abortion. The division also sponsors a lecture series on topics that include counseling and up-to-date technologies in fertility regulation. Faculty serve as mentors for resident research projects and invite them to participate in the division's rich research program, which currently focuses on new technologies, IUD simulation models, and patient safety in the ambulatory care setting

Research

The division is currently involved in an evaluation of team training at Planned Parenthood affiliates throughout the United States in order to assess quality and safety measures such as adverse outcomes, patient satisfaction, and staff perceptions. The division is also conducting studies to evaluate the use of a mobile, high-fidelity simulator to teach insertion of intrauterine contraception.

From left: Siripanth Nippita, MD, MS, Family Planning Faculty; Nina Douglass, LICSW, Social Worker; Maureen Paul, MD, MPH, Family Planning Division Director; Michelle Lightfoot, MD, MPH, 2nd Year Resident

REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY

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Clinical Care

Kim Thornton, MD
Division Director

Michael Alper, MD
Steven Bayer, MD
Brian Berger, MD
Merle Berger, MD
Alice Domar, PhD
Benjamin Lannon, MD
Werner Neuhauser, MD, PhD
Selwyn Oskowitz, MD
Alan Penzias, MD
David Ryley, MD
Rita Sneeringer, MD
Alison Zimon, MD

The REI unit at Boston IVF is one of the largest assisted reproductive technology programs in the United States, with faculty assisting in more than 35,000 births. Twelve board-certified reproductive endocrinologists staff the full-service, state-of-the-art clinic. Among the services offered are:

- Ovulation induction.
- Intrauterine insemination.
- In vitro fertilization.
- Intracytoplasmic sperm injection.
- Blastocyst culture and embryo freezing.
- Preimplantation genetic diagnosis and screening programs.

Boston IVF is leading efforts to reduce high-order multiple pregnancy rates, increasing the percentage of patients who have elective single-embryo transfers. The facility has a robust third-party reproduction program that, in addition to offering traditional (fresh) egg donation, now offers donation from frozen donor eggs. The clinic also has an active gestational carrier program. Boston IVF was one of the first centers in the Northeast to offer egg freezing. Its fertility preservation (oocyte and sperm cryopreservation) program, designed for patients with malignancies or other medical conditions requiring cytotoxic

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therapy, continues to grow. In addition, elective oocyte cryopreservation is available for women who wish to preserve their reproductive options. The program offers diagnostic and operative endoscopy (laparoscopy/hysteroscopy) for developmental and acquired abnormalities of the reproductive tract, and procedures to correct developmental uterine anomalies, uterine fibroids, and severe endometriosis.

In addition to the main facility in Waltham, Boston IVF has sites in Boston and Quincy, Massachusetts, as well as Maine and Rhode Island, with satellite clinics throughout New England. Boston IVF is sensitive to the need for complementary medicine in the treatment of infertility and offers these services through the Domar Center for Complementary Medicine. The center offers acupuncture, yoga, nutritional counseling, and mind/body techniques designed for relaxation. Patients also have access to a full range of mental health services.

Education

Alan Penzias, MD, *Fellowship Director*

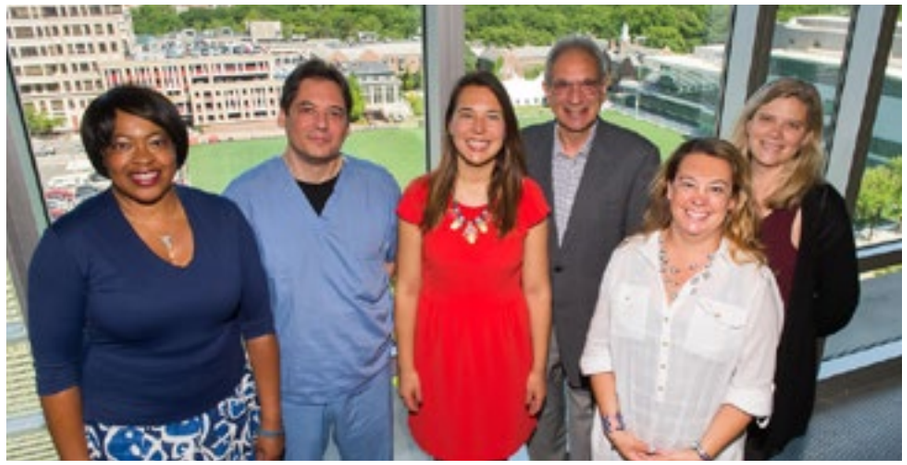
In their four-week REI rotation, second-year residents participate in all clinical services at the program's principal site, Boston IVF. The residents' clinical experience includes evaluation and management of new patients and those returning for consultation. Residents acquire skills performing ultrasound, sono-hysterograms, and hystero-salpingograms; they also assist in ambulatory surgery and advanced reproductive technology procedures. Residents are also responsible for REI patient care at BIDMC, including medical management of inpatients, gynecologic surgery, and ambulatory patient care for the fellow-led clinic. The REI lecture series, held for five sessions over the academic year, and conferences at BIDMC keep residents up to date on the latest topics in REI. Monthly Boston IVF grand rounds, a lecture series held at Boston IVF, and a Boston IVF journal club supplement these opportunities. Residents and fellows are encouraged to participate in clinical and basic science research projects, and they may be able to attend national meetings and present their research.

In the REI Fellowship, participants learn the skills for an academic career leading basic science or clinical research programs. In this three-year, ABOG-approved training program, fellows use their REI treatment skills in a clinical setting. Faculty with expertise in reproductive medicine, surgery and genetics, as well as pediatric and adolescent reproductive medicine, assist fellows in developing a foundation of clinical skill and a more specific area of expertise.

Alan Penzias, MD, Fellowship Director, presenting at Reproductive Endocrinology and Infertility group meeting

"Clinical innovation in the field of reproductive endocrinology and infertility helps to create families with increasing clinical success."

• Kim Thornton, MD,
Division Director



From left: Kim Thornton, MD, Division Director; Werner Neuhausser, MD, PhD, 2015 REI Fellowship Graduate; Nina Resetkova, MD, 2nd Year REI Fellow; Selwyn Oskowitz, MD, REI Faculty; Susan Kilbride; Rita Sneeringer, MD, REI Faculty

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Current Fellows
Academic Year 2015-2016

Kristi Maas, MD, ME
Lauren Murphy, MD
Nina Resetkova, MD, MBA

Program Graduate 2015
Werner Neuhausser, MD, PhD
Boston IVF/Harvard Stem Cell Institute
Boston, MA

2014 Where Are They Now?
Kathryn Humm, MD
Assistant Professor of OBGYN at the George Washington University School of Medicine and Health Sciences
George Washington Medical Faculty Associates, Division of Reproductive Endocrinology, Fertility, and IVF

Research

The Division of Reproductive Endocrinology and Infertility conducts a robust array of both basic science and clinical research projects. Goals in the laboratory at Boston IVF include understanding the fundamental aspects of oocyte maturation and preservation through vitrification. By studying preimplantation genetic diagnosis techniques, researchers hope to develop strategies that will improve IVF outcomes and reduce the burden of multiple pregnancies.

Clinical research focuses on outcomes related to assisted reproductive technology. Drs. Michele Hacker and Alan Penzias have led a rigorous analysis of the Boston IVF patient database, which contains records on more than 60,000 in vitro fertilization cycles. Other recent projects include estimating the cumulative pregnancy rate in younger women undergoing IVF, evaluating the influence of endometrial thickness and progesterone level on outcomes of assisted reproductive technology, and a prospective study of celiac disease among women undergoing infertility treatment. Results of the FASTT trial, the largest single-center fertility study funded by the NIH, have been published, and researchers are participating in the NIH-funded FORTT trial to determine the best fertility treatment for women of advanced reproductive age.

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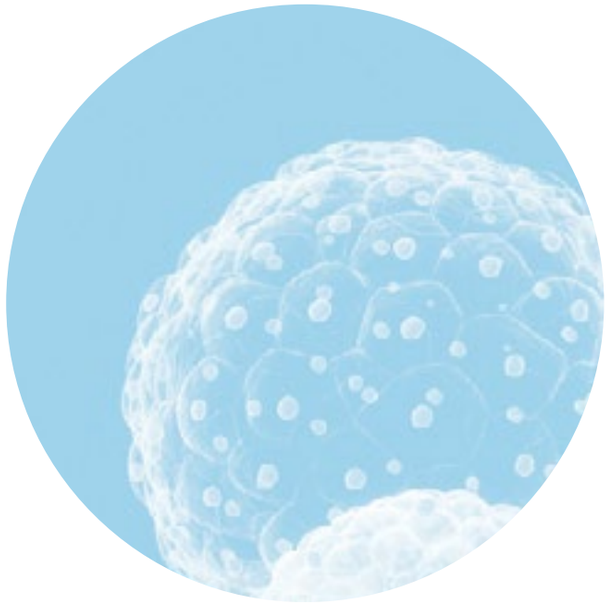

The division collaborates with the Harvard Stem Cell Institute and the Department of Stem Cell and Regenerative Biology. Dr. Kevin Eggan's lab focuses on how developmental and environmental cues induce heritable variation in chromatin structure and how variation regulates developmental potency, cell fate, and gene expression. The lab uses nuclear transfer and other approaches to develop human embryonic and induced pluripotent stem cell lines that carry the genes responsible for human neurodegenerative disease. Dr. Eggan's publication in Science, "Induced pluripotent stem cells generated from patients with ALS can be differentiated into motor neurons," was cited by Time as the Top Medical Breakthrough of 2008.

Division researchers bridge basic science with clinical research through the use of a discarded blood sample bank established in early 2008. The samples, paired with clinical outcomes of the patients, provide a powerful asset for establishing biomarkers of reproductive health. The study dovetails with our basic science research on ovarian aging and the impact of disease states, including polycystic ovary syndrome, on reproductive success.

Boston IVF

IVF Success Rate and Live Births—Fresh Embryos from Non-Donor Eggs*

Age of women	< 35	35–37	38–40	41–42
Number of cycles	859	570	555	351
Average number of embryos transferred	1.7	1.9	2.4	3.1
Percentage of elective single embryo transfer (eSET)	23.1	15.1	5.4	1.5
Percentage of transfers resulting in live births	36.0	27.3	23.4	12.4
Percentage of pregnancies resulting in singleton live births	62.1	64.2	58.3	42.4
Percentage of live births with triplets or more	1.1	0.0	1.0	0.0

**Centers for Disease Control and Prevention, American Society for Reproductive Medicine, Society for Assisted Reproductive Technology. 2012 Assisted Reproductive Technology Fertility Clinic Success Rates Report. Atlanta: U.S. Department of Health and Human Services; 2013.*

Boston IVF

IVF Success Rate and Live Births—Thawed Embryos from Non-Donor Eggs*

Age of women	< 35	35–37	38–40	41–42
Number of transfers	253	156	77	41
Percentage of transfers resulting in live births	29.6	28.8	16.9	14.6

Boston IVF

IVF Success Rate and Live Births—Donor Eggs*

	Fresh Embryos	Frozen Embryos
Number of transfers	139	140
Percentage of transfers resulting in live births	42.1	26.7

**Centers for Disease Control and Prevention, American Society for Reproductive Medicine, Society for Assisted Reproductive Technology. 2012 Assisted Reproductive Technology Fertility Clinic Success Rates Report. Atlanta: U.S. Department of Health and Human Services; 2013.*

MINIMALLY INVASIVE GYNECOLOGIC SURGERY

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Clinical Care

Hye-Chun Hur, MD, MPH, *Division Director*

Louise King, JD, MD, *Faculty*

The fellowship-trained surgeons in the Division of Minimally Invasive Gynecologic Surgery at BIDMC offer the highest level of care, allowing women from all backgrounds and all over New England to choose from the best surgical options. Our goal is to work with the patient to tailor a treatment plan to her specific needs, in the context of her condition and life stage. Despite the high complexity of the cases presented, our laparoscopic procedures have a low rate of conversion to open incision.

Our minimally invasive gynecologic surgeons specialize in advanced procedures using the latest techniques and equipment. We provide evidence-based care for women who require surgical management of benign gynecologic conditions, including both conventional laparoscopic and robotic approaches for procedures such as:

- Hysterectomies.
- Removal of ovaries and ovarian cysts.
- Myomectomies.
- Surgical treatment of endometriosis.
- Hysteroscopic sterilizations.

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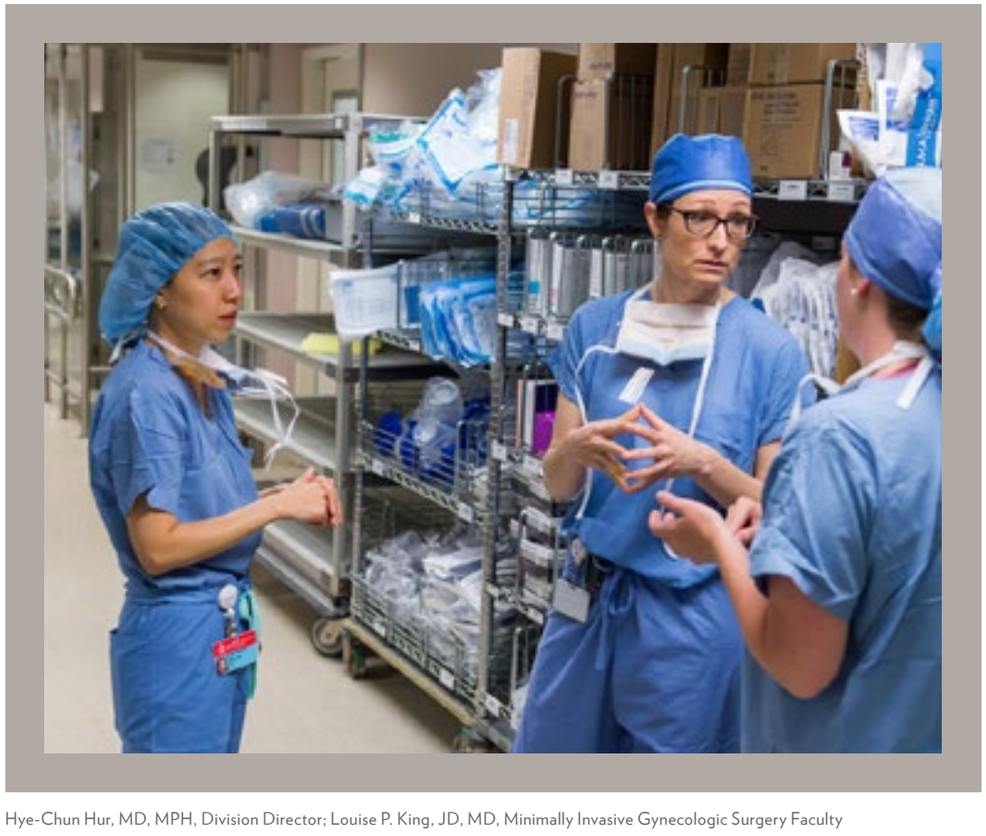

Hye-Chun Hur, MD, MPH, Division Director; Louise P. King, JD, MD, Minimally Invasive Gynecologic Surgery Faculty

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“This was the most positive experience I have ever had in a surgeon’s office. You were the most receptive to my input. I felt heard. You took the time to educate me and ensure I had the knowledge to make the most informed choices so I could be empowered to make the right decision for myself.”

• Patient Rachael Battaglioli

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Education

Hye-Chun Hur, MD, MPH, *Fellowship Director*

Residents in the Division of Minimally Invasive Gynecologic Surgery at BIDMC are routinely exposed to a high volume of minimally invasive surgeries, enabling them to develop the skills of well-trained gynecologists.

Third-year BIDMC residents rotate with fellowship-trained minimally invasive gynecologic surgeons in the inpatient operating room, as well as in ambulatory surgical settings for comprehensive surgical training. Principles and skills are taught progressively over their four-year residency to enable surgical treatment of advanced pelvic/abdominal pathology through a laparoscopic, hysteroscopic, or vaginal approach. Our graduates consistently rank in the 90th percentile of procedure volume nationally.

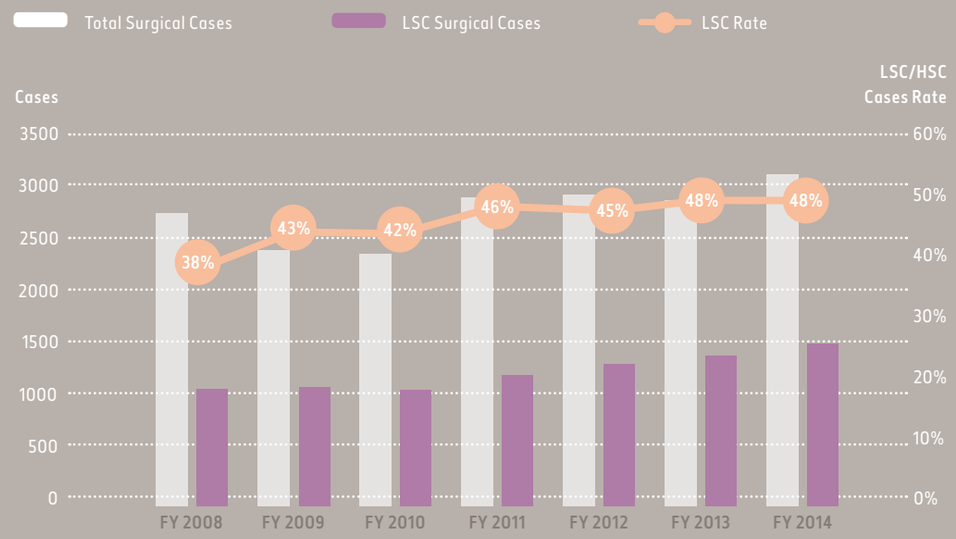
Training is supplemented by rotations at Mount Auburn Hospital and BID Needham, as well as by ambulatory hysteroscopy and surgery in the Shapiro Clinical Center and in private offices. In addition to daily inpatient management and teaching rounds with the Gynecology Attending of the Week, all cases include teaching at the bedside and in the operating theater. Weekly staff and resident conferences enhance evidence-based care, and a multidisciplinary committee convenes monthly to review resident cases and create evidence-based surgical plans.

Other opportunities include 24-hour access to a state-of-the-art simulation center that enables residents to learn minimally invasive surgical techniques in a nonthreatening environment. Exercises include: robotic simulations, suturing using a conventional laparoscopic tower, and scenarios in a fully equipped virtual operating room.

Residents are offered a bimonthly MIGS didactic series along with intensive three-hour resident workshops, which are conducted twice yearly for hands-on surgical teaching. A structured Fundamentals of Laparoscopic Surgery Program includes didactic and skills training in laparoscopic techniques. FLS certification is offered for all residents in their third year of training. Fully 100% of our residents have passed the cognitive and skills components of the FLS examination prior to completing OBGYN training.

Louise P. King, JD, MD, Minimally Invasive Gynecologic Surgery Faculty

Surgical Approach for GYN Cases



LSC - Laparoscopy

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In the MIGS Fellowship, fellows participate in a two-year program focused on advanced minimally invasive gynecology. In this American Association of Gynecologic Laparoscopists-approved training program, fellows develop their minimally invasive gynecologic skills through three core components: advanced surgical training, evidence-based gynecology for outpatient care in clinic, and clinical research. A variety of experts in gynecologic surgical specialties participate as faculty in the fellowship program (MIGS, Urogynecology, Gynecologic Oncology, Colon and Rectal Surgery, and Urology). Our trainees have access to a simulation center that is available 24 hours per day, seven days per week. The simulation center is utilized for practice and teaching at our academic center.

Research

Clinical research is both a strong interest of our faculty and an important focus of the MIGS Fellowship. Both primary and multisite projects are being conducted. Recent projects include evaluation of the incidence of venous thromboembolism events after different modes of gynecologic surgery, peri-operative management of multi-fibroid uterus with significant fibroid burden, and improvement of radiologic fibroid assessment with a new structured reporting system.

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FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY

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Clinical Care

Janet Li, MD, *Section Chief*

Roger Lefevre, MD, *Faculty*

The FPMRS service cares for women with the full spectrum of pelvic floor disorders. In this rapidly evolving field, we are continually balancing safety with innovation, all with the goal of offering the latest proven treatment options. BIDMC's Pelvic Health Program is a designated Center of Excellence for Continence Care by the National Association for Continence. The program, led by Dr. Li, includes a multidisciplinary team of experts from FPMRS (Urogynecology), Urology, Colon and Rectal Surgery, Gastroenterology, Radiology, and Rehabilitation Services; they are committed to providing high-quality, patient-centered care for women with bladder and bowel control problems, and related pelvic health disorders.

The FPMRS service takes a holistic approach to pelvic floor disorders, offering state-of-the art diagnostic services and the most effective, safe, and up-to-date treatments. With two board-certified physicians and a specialized physician's assistant, we offer the breadth of therapeutic options, including:

- On-site pelvic floor physical therapy.
- Tibial neuromodulation.
- In-office intravesical onabotulinumtoxin A injections.
- Sacral neuromodulation.

Minimally invasive surgical approaches are our specialty, even for complex disorders.

In addition to the BIDMC Longwood campus, we see patients in Needham and Chelsea.

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Janet Li, MD, Section Chief

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“Pelvic floor disorders can often be devastating for women, affecting their social, physical, and psychological well-being. Our sensitive, team-based approach is designed to help patients navigate through the range of treatment options, thereby empowering women to regain active lifestyles on their own terms. We strive to provide exceptional, personalized, high-quality care.”

• Janet Li, MD, Section Chief

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Education

Eman Elkadry, MD, *Fellowship Director*

The FPMRS Section trains medical students, residents, and fellows in urogynecologic procedures and out-patient clinics during their gynecology rotation. BIDMC also offers an elective sub-internship rotation to final-year medical students. The FPMRS curriculum includes office evaluation of pelvic floor disorders, in-office diagnostic procedures such as multichannel urodynamic testing and cystourethroscopy, and nonsurgical and surgical management, with an emphasis on minimally invasive vaginal and robotic approaches.

Residents rotate through FPMRS in their second and third years for four weeks, spending time in the urodynamics lab and with our pelvic floor physical therapists. They also attend and present at multidisciplinary pelvic floor conferences and at journal club. Hands-on training in robotic surgery in the dry lab setting and on the robotic simulator is provided.

Residents also obtain urogynecologic surgical experience during core gynecology rotations at each level of postgraduate training. In addition, each third-year resident has urogynecologic exposure during a 10-week rotation at Mount Auburn Hospital in Cambridge.

BIDMC and Mount Auburn have a joint Accredited FPMRS Fellowship Program in Female Pelvic Medicine and Reconstructive Surgery, based at Mount Auburn Hospital. In addition to a broad clinical experience, trainees have the

Current Fellows Academic Year 2015-2016

Nabila Noor, MD

Emily Von Bargen, DO

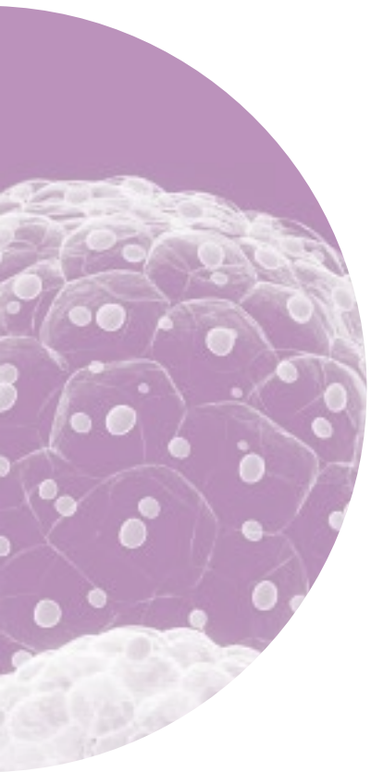
Hussein Warda, MD

Program Graduates: Where Are They Now?
2015

Sybil Dessie, MD
Mid-Atlantic Permanente Medical Group
Largo, MD

2014

Amos Adelowo, MD, MPH
Emory University School of Medicine
Atlanta, GA



opportunity to research pelvic floor disorders. Our residents and fellows have presented their work at national meetings and been published in major peer-reviewed journals.

The FPMRS Fellowship trains physicians to provide expert care for women with pelvic floor dysfunction and thus improve their quality of life. The three-year program, located at Mount Auburn Hospital/BIDMC, is approved by the ACGME. The program covers outpatient urogynecologic assessment and treatment, office-based procedures, and appropriate surgical candidate selection, with an emphasis on treatment options and patient counseling. The fellowship emphasizes a comprehensive approach to surgical management, including preoperative and postoperative management. Training in both clinical and surgical settings includes laparoscopic, vaginal, and abdominal surgery, as well as robotic surgery. Mentorship and other support is available for research, which is an important and well-integrated portion of the curriculum. Colorectal and urology experience at BIDMC is also an integral part of the training program.

Research

Research projects are frequently conducted in collaboration with the Division of Urogynecology at Mount Auburn Hospital. Recent research includes a prospective evaluation of postoperative pain after transobturator midurethral sling, as well as a survey of patient attitudes about transvaginal mesh repair. Three ongoing randomized clinical trials include the effect of botox on refractory myofascial pelvic pain, the utility of mechanical bowel preparation during pelvic reconstructive surgical procedures, and an evaluation of physical therapy following third- and fourth-degree lacerations.

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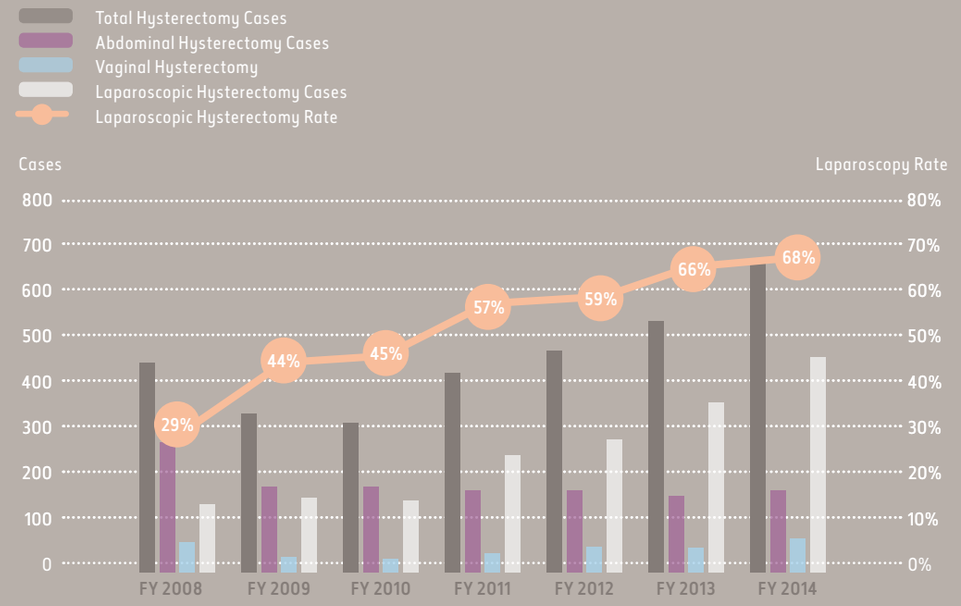
Surgical Approach to Hysterectomy



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DIVISION OF UROGYNECOLOGY AT MOUNT AUBURN HOSPITAL

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Cambridge, Massachusetts
Peter L. Rosenblatt, MD
Division Director

The Division of Urogynecology in the OBGYN Department at Mount Auburn Hospital is a community partner of the OBGYN Department at BIDMC. Our large urogynecology and reconstructive pelvic surgery center serves all of New England as a referral center for basic and complex evaluation and management of pelvic floor disorders, such as urinary and fecal incontinence, overactive bladder and pelvic organ prolapse.

The division consists of:

- Four fellowship-trained urogynecologists.
- A minimally invasive gynecologic surgeon.
- Three fellows in FPMRS.
- A nurse practitioner and two nurses who specialize in urodynamic and anorectal testing.

The clinical investigation team has a full-time research coordinator. The division's philosophy emphasizes nonsurgical as well as minimally invasive surgical procedures, including robotic and laparoscopic reconstructive surgery.

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QUALITY, SAFETY AND PERFORMANCE IMPROVEMENT

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Toni Golen, MD
Vice Chair, Quality, Safety and Performance Improvement
Medical Director, Labor and Delivery and Postpartum

Neel Shah, MD, MPP
Obstetrics and Gynecology Faculty
Ariadne Labs for Health Systems Innovation
Founder and Executive Director, www.CostsofCare.org

Jo Ann Jordan, BA
Assistant Director, Quality Improvement
Specialist, Data Analysis

Roger Lefevre, MD (Gynecology)
Mary Vadnais, MD, MPH (Obstetrics)
Vice Chairs,
Quality Assurance Committee

Gina Murphy, RN
Celeste Royce, MD
Elise Porter, MBA
Co-Chairs, GYN Leadership (Quality Improvement) Committee

Toni Golen, MD
Jane Smallcomb, RN
Susan Crafts, RN
Co-Chairs, OB Leadership (Quality Improvement) Committee

Toni Golen, MD
Mary Vadnais, MD, MPH
Philip Hess, MD
Hope Ricciotti, MD
Co-Directors,
Obstetrical Simulation Program

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Quality Assurance Research Team Meeting

Improving the safety of childbirth and women's health care is the primary goal for the Division of Quality, Safety and Performance Improvement. Elevated to a formal division in 2011 with the appointment of Dr. Toni Golen as vice chair, the QI Division works to analyze cases, identify opportunities for systematic process improvement, comply with regulatory guidelines, and create an environment of just culture. BIDMC's institutional goal of eliminating preventable harm is embedded in quality improvement projects. Through teamwork, simulation, and transparency, we look critically at ourselves and identify opportunities to prevent adverse outcomes and improve patient satisfaction.

The OBGYN Department at BIDMC leads the national movement to systematically improve patient safety and healthcare quality. In 2007, we received the John M. Eisenberg Award for Patient Safety and Quality from the Joint Commission, an award that recognizes leadership and dedication in innovations to improve patient care and safety. That same year, Blue Cross Blue Shield of Massachusetts awarded us its very first Health Care Excellence Award, created to recognize exceptional achievement in improving the safety and efficacy of health care in Massachusetts. Today, BIDMC has among the lowest Adverse Outcome Index ratings of all comparable tertiary hospitals reporting to the National Perinatal Information Center, a national nonprofit organization that collects data.

Quality Assurance and Improvement

Our patient safety program is structured around traditional case review, project-based quality improvement, and sentinel event analysis. The OBGYN Quality Assurance Committee—including attending physicians, residents, nurse midwives, and nurses, representing all specialties—chooses cases based on indicators described by the Joint Commission, American College of Obstetricians and Gynecologists, and the Harvard Risk Management Foundation. Staff members also submit to the committee specific concerns regarding a patient's care. Committee members serve as volunteers and commit to the goals of monitoring and enhancing the quality of patient care.

While the OBGYN Quality Assurance Committee assesses individual cases, leadership committees (quality improvement) develop systems for improving the processes involved in patient care. Many ideas for quality improvement projects are generated by Quality Assurance Committee case reviews, where gaps in systems-based practice are identified.

Examples of recent process improvements include:

- The initiation of a system to limit the number of elective inductions of labor.
- Development of care pathways for patients undergoing urogynecologic procedures.
- Ongoing drills to improve team performance in emergency deliveries.

Neel Shah, MD, MPP, OBGYN Faculty; Toni Golen, MD, Vice Chair, Quality, Safety and Performance Improvement; Atul Gawande, MD, MPH, Executive Director of Ariadne Labs

Research

The ability to measure quality is an essential element of improving patient safety. Our goal is to identify opportunities for improvement, measure our current state, set goals, and then achieve them.

In the last year, ACOG, the Joint Commission, and Massachusetts payers have all placed renewed focus on the need to safely reduce primary cesarean delivery rates. We have begun three projects to build on our progress and establish BIDMC as a leader:

- We know that labor and delivery requires more resources and clinical attention than cesareans; however, these differences have not been precisely measured. We have worked with Harvard Business School to map resource requirements for childbirth so that we could more accurately understand the costs of common clinical pathways that can influence the mode of delivery. This project uses a time-driven, activity-based costing method that is being applied all over the world to improve healthcare value. We were the first department at BIDMC to apply this method, and the first in the world to apply it to childbirth. Dr. Golen received a grant from the Shapiro Institute to teach our residents this method to prepare them for quality improvement leadership roles in the future, while also meeting the ACGME requirement for systems-based practice.
- Dr. Neel Shah and Dr. Golen also received a grant from CRICO and the Harvard Risk Management Foundation to extend this project and examine if the rules for assigning nurses to patients—or patients to beds—can have an impact on the probability of cesarean delivery. In this project, we will use our understanding of the process steps, along with cost-modeling developed with Harvard Business School, to design a resource optimization algorithm. Our CRICO grant will fund a research team from MIT to help us develop this algorithm, which we hope to translate into new team training techniques within the next two years.
- Dr. Shah and his colleagues at Ariadne Labs also received a large grant from the Rx Foundation to study the relationship between primary cesareans and the operational management of labor and delivery units. Using data from the National Perinatal Information Center/Quality Analytic Services, we have enrolled over 50 hospitals across the United States in this study. BIDMC is one of 12 pilot hospitals in the study, which will be the first to systematically characterize how management practices vary in labor and delivery and attempt to relate this variation to outcomes. We expect results that will help BIDMC and other hospitals benchmark their management performance by the fall of 2016.

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Quality Assurance Research Team Meeting

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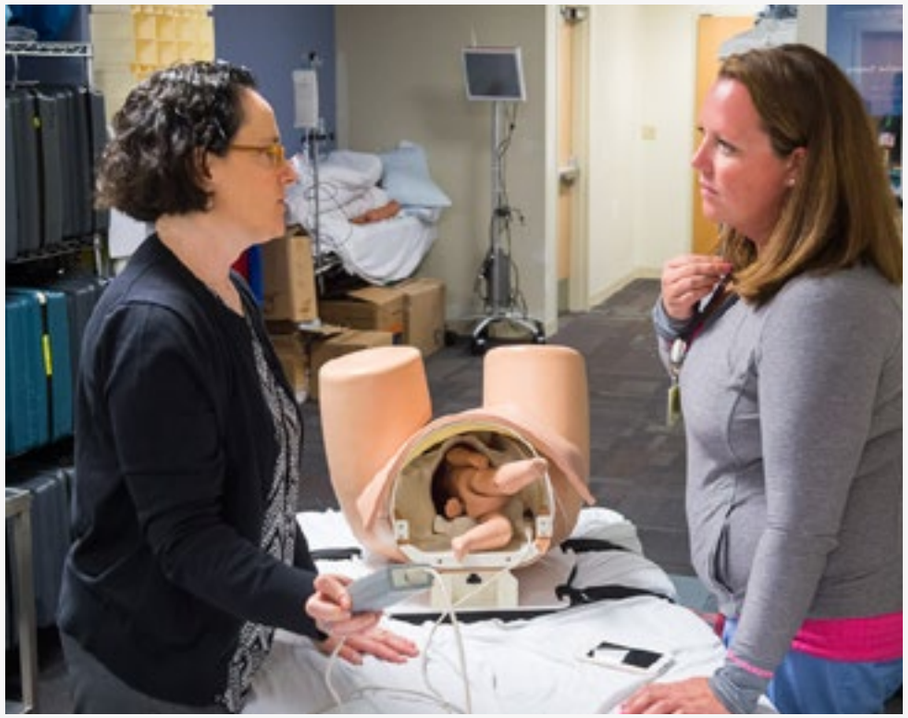

Top: Toni Golen, MD, Vice Chair, Quality, Safety and Performance Improvement; Amanda Russell, RN
Lower Right: Kari Plewniak, MD, 3rd Year Resident; Michael McBride, RN, Simulation Faculty

Simulation Training

The OBGYN Department at BIDMC is a national leader in simulation training, which is a key aspect of our culture of safety and participation. Our obstetricians and trainees undergo mandatory annual obstetrical simulation training, and our trainees perform semi-annual gynecologic surgical skills simulation. Since 2007, the BIDMC Obstetrics Simulation has grown from a simple exercise involving shoulder dystocia to a comprehensive, multidisciplinary program that includes:

- Complex clinical scenarios.
- A rich collection of high-acuity, low-frequency events.
- Immediate standardized feedback.
- Structured debriefing.
- A combination of high- and low-fidelity models.

Our simulation programs are based on the belief that teamwork and communication are the foundation on which clinical and technical skills are built. We host other institutions as part of our active membership in the ACOG Simulation Consortium. Learners are asked to demonstrate knowledge, technical skill, and teamwork behavior appropriate for these obstetrical events. Objectives of the program are:

- To provide a safe environment to demonstrate and improve teamwork communication and care, with a particular focus on high-acuity, low-frequency events.
- To provide individual feedback in a structured, non-punitive environment by using an objective assessment tool.
- To provide related didactic education to physicians and nurses regarding high-risk, low-frequency obstetrical emergencies.

The OBGYN Department has signed an agreement with CRICO Harvard Risk Management that links participation to credentialing.

NEONATOLOGY

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Clinical Care

DeWayne Pursley, MD, MPH, *Chair*

The multidisciplinary Neonatal Intensive Care Unit team provides a full range of services for neonatal patients and comprehensive support for their families. Our physicians, midlevel providers, nurses, neonatal respiratory therapists, social workers, neonatal dieticians, occupational and physical therapists, pharmacists, and an audiologist are extensively trained in the care of high-risk newborns. Through a tightly integrated system of consultation with the Maternal-Fetal Medicine staff, genetic counselors and Boston Children's Hospital pediatric subspecialists, the NICU team tracks all maternal admissions likely to result in the delivery of a newborn requiring intensive care and then provides necessary care in a coordinated, multidisciplinary model. The unit provides cutting-edge therapy, including therapeutic hypothermia and inhaled nitric oxide, while making potentially groundbreaking clinical research protocols available to eligible patients.

The NICU supports high-risk neonates resulting from BIDMC primary obstetric care and both maternal-fetal and neonatal transfers from a growing network of community physicians and referring hospitals (including our sister institution, BID-Plymouth). The 53-bed NICU program cares for more than 1,200 newborns each year; almost 900 require admission, while the remainder are evaluated and triaged to the newborn nursery.

Together with attending neonatologists and neonatal-perinatal fellows, nurse practitioners and physician assistants provide around-the-clock coverage in the NICU. They are also responsible for teaching Harvard Medical School students, as well as nurse practitioner and other pre-professional students. Neonatal-perinatal fellows play an important clinical role in the NICU, providing ongoing care along with triage, consultative, and admission support. During monthly rotations, they bring new knowledge and clinical innovations to the department and support the unit's goal of providing care at the leading edge of medicine.

DeWayne Pursley, MD, MPH, Chair

“The faculty, staff, and trainees take great pride in the care and comfort provided for our NICU patients – among the hospital’s sickest, smallest and most vulnerable.”

• DeWayne Pursley, MD, MPH, Chair

Education

Dara Brodsky, MD, *Site Director*

BIDMC is one of four clinical and research training sites for the Harvard Neonatal-Perinatal Medicine Fellowship Program, one of the two largest neonatology training programs in the United States. Fellows rotate monthly through the NICU, caring for newborns and their families and honing their team leadership and patient management skills in the NICU, delivery room, and high-risk antepartum consultation service.

Each year, the Department of Neonatology offers an American Academy of Pediatrics-approved training course in neonatal resuscitation to all OBGYN and anesthesia residents. First-year residents receive initial training, while all other residents are offered annual refresher courses. The department also offers formal clinical training through Harvard Medical School. During their core pediatrics rotation at Boston Children's Hospital, third-year medical students focus on newborn medicine in a one-week rotation through the BIDMC newborn nursery; fourth-year students are offered a month-long sub-internship in the NICU. During the summer, undergraduate and medical students participate in research projects and are introduced to clinical neonatology. Throughout the year, the department also offers observerships to both national and international neonatology faculty.

Research

The Department of Neonatology research program is aimed at improving the care provided to newborns and their families through epidemiologic, health services and translational research. This work spans the following areas:

- Improving outcomes of NICU patients, graduates, and families.
- Understanding the economic implications of neonatal care.
- Improving care delivery.
- Understanding the mechanisms of prematurity complications.
- Optimizing education in newborn care.

DeWayne Pursley, MD, MPH, Chair presents award to Emily Holden, MD, former Resident

Neonatology Research, *continued*

The program has pioneered comparative quality assessment by using a severity normalization tool—the Score for Neonatal Acute Physiology—in order to improve care across institutions. This early work has fostered collaboration among all the NICUs in the state and led to an active, statewide collaboration in quality improvement, established and headed by a BIDMC neonatologist. Common themes are:

Health Services and Quality Improvement:

- Improving NICU patient safety through team training.
- Applying cost-effectiveness analysis to optimize the use of NICU resources.
- Integrating new information technology into the delivery and evaluation of newborn care.
- Assessing the effectiveness of perinatal and neonatal health services on the health of very premature infants.
- Understanding the emotional burden on families with preterm infants during and after discharge from the NICU.

Maternal and Perinatal Determinants of Preterm Delivery and Infant Outcomes:

- Determining whether dietary factors and epigenetic modifications account for disparities in preterm birth.
- Understanding the role of racial and social disparities in infant outcomes.

Long-Term Health Outcomes:

- Identifying barriers to early intervention enrollment for NICU graduates.

Clinical and Translational Research:

- Determining the impact of nutrition on health and disease in the preterm infant.
- Examining the role of erythropoietin optimization on brain development.
- Studying the effects of probiotics in promoting intestinal health and decreasing necrotizing enterocolitis.

NURSING

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Phyllis West, RN, MSN
Associate Chief Nurse

Jane Smallcomb, RN, MS
Senior Director, Perinatal Units

Meghan Dalton, RN
Nursing Director, Mother-Baby Units

Kathy Tolland, RN
Nursing Director,
Neonatal Intensive Care Unit

The OBGYN nursing staff at BIDMC is committed to a woman's health through her complete life cycle. Our perinatal nurses provide childbirth education and expert care to patients in the Labor and Delivery Unit, Newborn Nurseries, High-Risk Antepartum and Postpartum Units, and Neonatal Intensive Care Unit. New mothers receive one-on-one teaching, as well as certified lactation support. Our gynecologic nurses provide expert postoperative care, including management of complex gynecologic surgical and oncology patients while addressing patients' emotional and physical well-being.

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PROGRAM IN EPIDEMIOLOGIC RESEARCH

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Michele Hacker, ScD, MSPH
Vice Chair, Research
Director, Program in Epidemiologic Research

Faculty

Lev T. Perelman, PhD
Director, Center for Advanced Biomedical Imaging and Photonics

Laura Dodge, ScD, MPH
Irving Itzkan, PhD
Le Qiu, PhD
Saira Salahuddin, PhD, MBBS
Vladimir Turzhitsky, PhD
Edward Vitkin, PhD
Lei Zhang, MD, PhD

Staff

Miriam Haviland, MSPH
Anna Merport Modest, MPH
Dayna Neo, MPH
Alla Turshudzhian
Yuri Zakharov, PhD

Affiliated Faculty

S. Ananth Karumanchi, MD, PhD
Medicine/Nephrology

Yunping Li, MD
Anesthesia

Jonathan Hecht, MD, PhD
Director of Autopsy Perinatal, Placental, and Gynecologic Pathology

The Program in Epidemiologic Research supports the department's basic science, as well as translational, clinical, public health, and medical education projects that enhance the interests and expertise of the faculty, fellows, residents and medical students. Mentorship and assistance with study design, protocol development, institutional review board approval, study implementation, data collection and management, data analysis, manuscript preparation, and grant writing are all provided, with an emphasis on the research endeavors of residents, fellows, and junior faculty.

Residents and fellows routinely present at national and international meetings and publish in peer-reviewed journals. Projects include prospective and retrospective observational studies, randomized controlled trials, mixed-methods surveys, and experimental animal models.

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Recent topics have evaluated:

- The timing of voiding on the ability to accurately assess the cervix with transvaginal ultrasonography.
- Botulinum toxin injections for chronic pelvic pain.
- In vitro fertilization outcomes in young women.
- Simulation training for minimally invasive surgery and obstetric complications.
- Adolescent perspectives on family planning services.

Each academic year concludes with Resident Research Day, where both the department and hospital residents are honored for their outstanding projects.

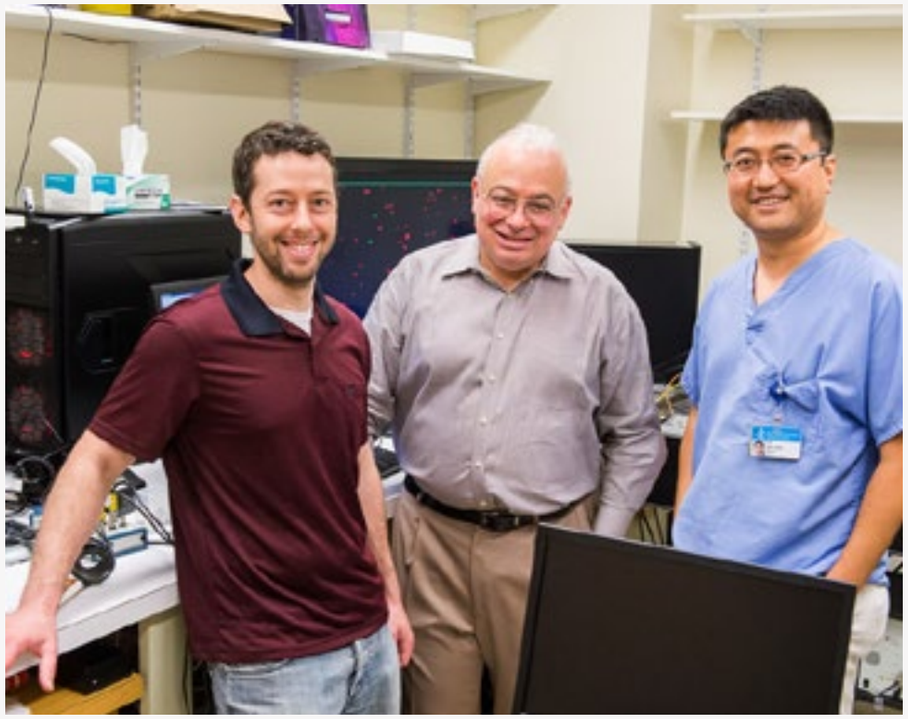
Collaboration with other departments and institutions has also improved our understanding of disease and the delivery of health care. For example, a project on the pathogenesis of preeclampsia has led to exciting new findings and potential clinical therapies; an ongoing study of gene expression in pregnancies complicated by intrauterine growth restriction also holds promise. We anticipate similarly interesting results from a prospective cohort study investigating the relationship between epigenetics of the cervix and spontaneous preterm birth, which is conducted in collaboration with the Department of Neonatology.

The department places special emphasis on epidemiology and public health policy as they relate to women's health among the vulnerable and underserved, both locally and internationally.

Resident-initiated projects include:

- Investigation of patient-collected samples for HPV testing among women with limited access to medical care in Boston.
- Assessment of the clinical characteristics of preeclampsia and eclampsia in rural Haiti.
- Evaluation of postpartum IUD placement in Uganda.

Our faculty also work with academic, governmental, and non-governmental partners to better understand women's health needs during humanitarian crises. Current projects include understanding sexual violence in the eastern Democratic Republic of Congo, gender inequitable practices in South Sudan, and postelection violence in Kenya.



Vladimir Turzhitsky, PhD, Research Faculty; Lev Perelman, PhD, Director, Center for Advanced Biomedical Imaging and Photonics; Le Qiu, PhD, Research Faculty

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Center for Advanced Biomedical Imaging and Photonics

Lev T. Perelman, PhD, *Director*

Through its three main research programs, the center develops and uses tools and platforms for in vivo optical biomedical imaging.

Our studies of in vivo optical detection of preinvasive cancer focus on rapid optical scanning and multispectral imaging of the epithelial surface of various organs in the reproductive and gastrointestinal tracts, in order to provide a diagnosis in near real time. Vastly superior to the present strategy of random biopsies, this approach provides a powerful tool for screening large populations of patients for early precancerous changes. BIDMC researchers pilot-tested this instrument on the esophagus and—for the first time in the world—successfully guided biopsies to detect and map sites of invisible dysplasia that would have been missed by the current standard of care.

We are also investigating optical spectroscopic techniques for noninvasive prenatal diagnosis. Although several fetal cell types have been targeted, the search has focused on fetal nucleated red blood cells (fNRBC). Because of the low concentration of these cells in maternal blood, and interference by adult nucleated red blood cells, reliable use of viable fNRBC remains a challenge. We have demonstrated that fNRBC optical properties provide a unique biomarker that is based on the light-scattering spectroscopic signatures of fNRBC and may enable isolation of these cells from maternal peripheral blood samples. This brings us closer to our goal of developing a noninvasive prenatal genetic testing technique.

Finally, our study of confocal light absorption and scattering spectroscopic (CLASS) microscopy has novel potential for optical imaging of noninvasive monitoring of tiny embryonic cells. The human embryo's development and response to environmental factors could be monitored at all critical stages using CLASS microscopy. For example, when cells are in metaphase, CLASS could provide information concerning the number and shape of chromosomes. Because this measurement is nondestructive and requires no exogenous chemicals, a given embryo in vitro could be monitored over time before implantation. Such progression studies are not possible with currently available techniques.

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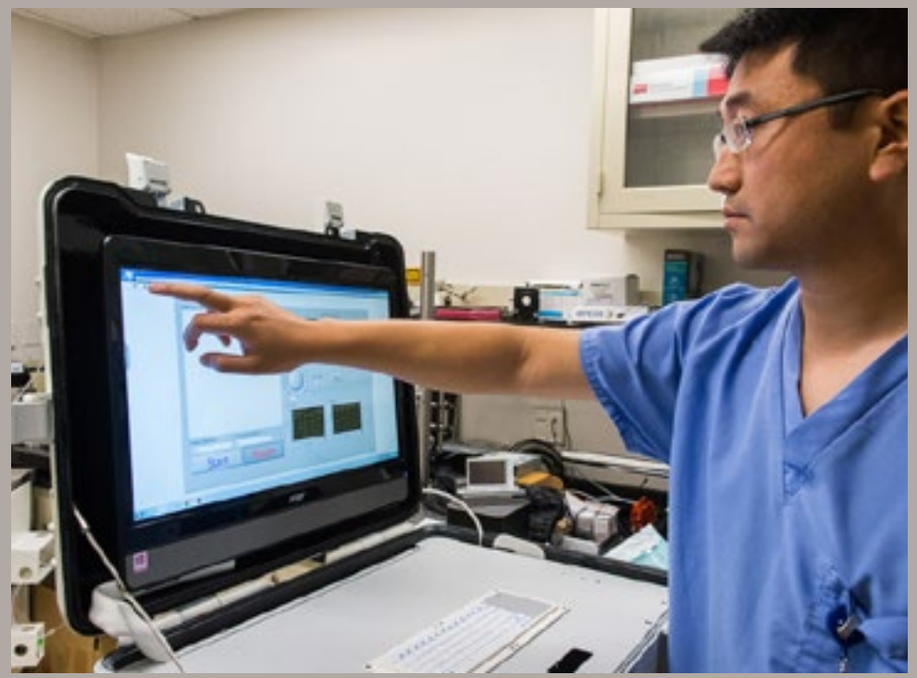
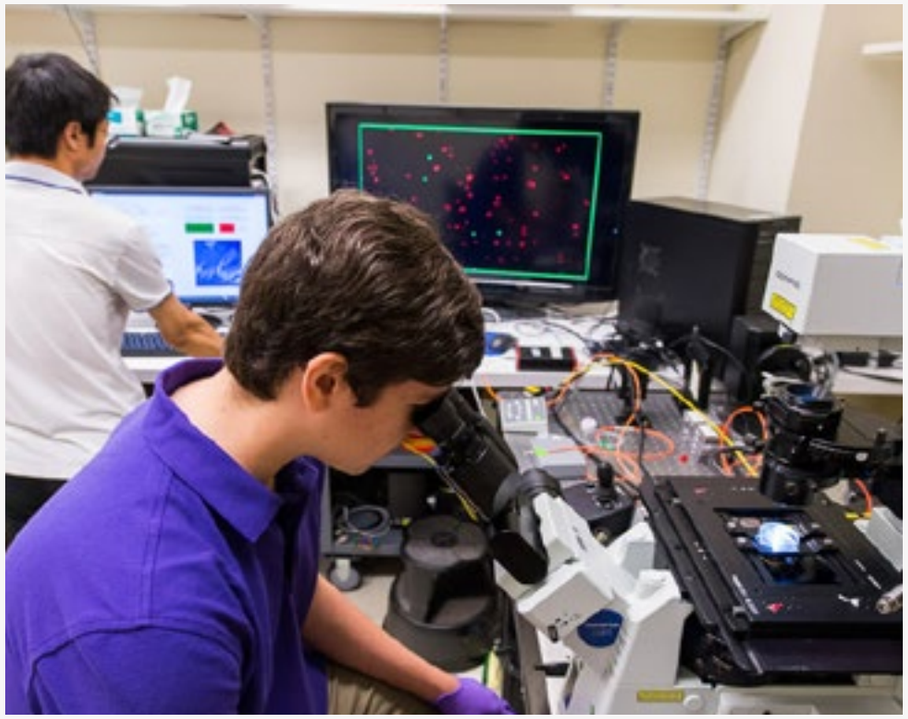
“Main research programs at the Center for Advanced Biomedical Imaging and Photonics, which I direct, involve development of new optical techniques for noninvasive prenatal genetic diagnosis, confocal spectroscopic microscopy of embryonic cells on the submicron scale, and in vivo detection of preinvasive cancer in reproductive and gastrointestinal tracts with light. Novel optical spectroscopic approaches, being noninvasive, rapid, and relatively inexpensive, are often vastly superior to traditional strategies and will become powerful clinical tools of the near future.”

- Lev Perelman, PhD, Director, Center for Advanced Biomedical Imaging and Photonics



Le Qiu, PhD, Research Faculty



Gabriel Weinstein, Student

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Center for Vascular Biology Research

S. Ananth Karumanchi, MD, PhD, *Director*

Through its three main research programs, the center develops and uses tools and platforms for in vivo optical biomedical imaging.

Joint research with BIDMC's Department of Medicine has helped diagnose and treat preeclampsia—a disease that complicates 5% of pregnancies worldwide and is a cause of maternal and fetal mortality. Researchers first found that sFlt-1, a molecule that occurs naturally in the placenta, may cause preeclampsia when it is overabundant. In collaboration with the Hospital for Sick Children in Toronto, researchers discovered that, when sFlt-1 combines with a second protein called soluble endoglin, preeclampsia can be life-threatening. Through this work, BIDMC has filed for patents on methods of diagnosing and treating preeclampsia. BIDMC researchers are testing whether these two molecules can be used as biomarkers to help clinicians make a more prompt and accurate diagnosis. Although drug-based therapies for preeclampsia may still be a few years away, researchers are optimistic.

Renal specialist Dr. S. Ananth Karumanchi directs this research program, which is also evaluating the pathogenesis of the excess cardiovascular disease noted in women with a history of preeclampsia, as well as noninvasive techniques to evaluate pregnancy in an animal model of preeclampsia.

Other research includes collaboration with the Department of Neonatology examining the relationship between maternal hypertension and neonatal necrotizing enterocolitis in premature infants.

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SOCIAL WORK

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Barbara Sarnoff Lee, LICSW,
Senior Director of Social Work and Patient/Family Engagement

OBGYN Social Workers
Betsy Barnet, LICSW
Nina Douglass, LICSW
Susan Remy, LICSW
Sheleagh Somers-Alsop, LICSW
Gail Wolfsdorf, LICSW

Community Resource Specialist
Glady Thomas

OBGYN social workers advise, educate, and counsel women through all of life's stages, with specialized expertise in helping them adjust to pregnancy and parenting. Social workers also address prenatal and postpartum mood disorders, pregnancy loss and bereavement, pregnancy termination, gynecological cancers, menopause, and substance use. Staff members from the Department of Social Work function alongside BIDMC patients, families, and staff, and help connect patients with community services.

The Center for Violence Prevention and Recovery provides counseling and advocacy services for those who have been harmed by violence. The program includes SafeTransitions, a domestic violence intervention program, the Rape Crisis Intervention Program, and a community violence intervention program.

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The Parent Connection

Christine Sweeney, LICSW, *Program Manager*

The Parent Connection helps families anticipate and adjust to life after birth by providing them a continuum of personal outreach and support, from before delivery to after a mom goes home with her new baby. An award-winning and complementary postpartum service since 1999, The Parent Connection exemplifies BIDMC's values of "Human First," and patient- and family-centered care.

Expectant couples are invited to participate in our monthly Becoming Parents workshop, where they will learn what to expect during the "Fourth Trimester." By setting realistic expectations and providing the opportunity to discuss them with their partners and in a group, parents are better prepared to navigate and support each other through this adjustment.

In our Mentoring Mom service, trained and supervised volunteers call new parents weekly throughout the first 12 weeks after delivery to support families and connect them to appropriate resources. These Mentors are often the first to help a new mom or her partner recognize symptoms consistent with a postpartum mood disorder and help her obtain fast and appropriate treatment. Mentors also remind new moms that they are not alone.

New Moms groups at several community locations help first-time moms feel less isolated by giving them an opportunity to share their experiences and ask questions. One group meets in the evenings to accommodate the schedules of working mothers.

BabyKnowHow, the program's weekly blog, addresses issues from traveling with a baby to coping with sleep deprivation. It also provides an online forum for support.

"I felt so much better about being a new mom, hearing that everyone had the same worries and things going on with their babies, and everything was perfectly normal!"
– New Moms group participant

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"Since the Parent Connection began 16 years ago, we have helped more than 10,000 new parents adjust to first-time parenthood. Through weekly phone support, our new moms groups, and our BabyKnowHow blog, we let our patients know they are not alone in this amazing and sometimes overwhelming journey – even after they leave our postpartum units."

• Christine Sweeney, LICSW

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PUBLICATIONS

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Abstracts—Oral

Ada ML, Hacker MR, Shainker SA, Haviland MJ, Burris HH. Trends in spontaneous versus medically-indicated preterm birth, 2004-2013. 2015. Presented as an oral presentation at the annual meeting of the New England Perinatal Society, Newport, RI.

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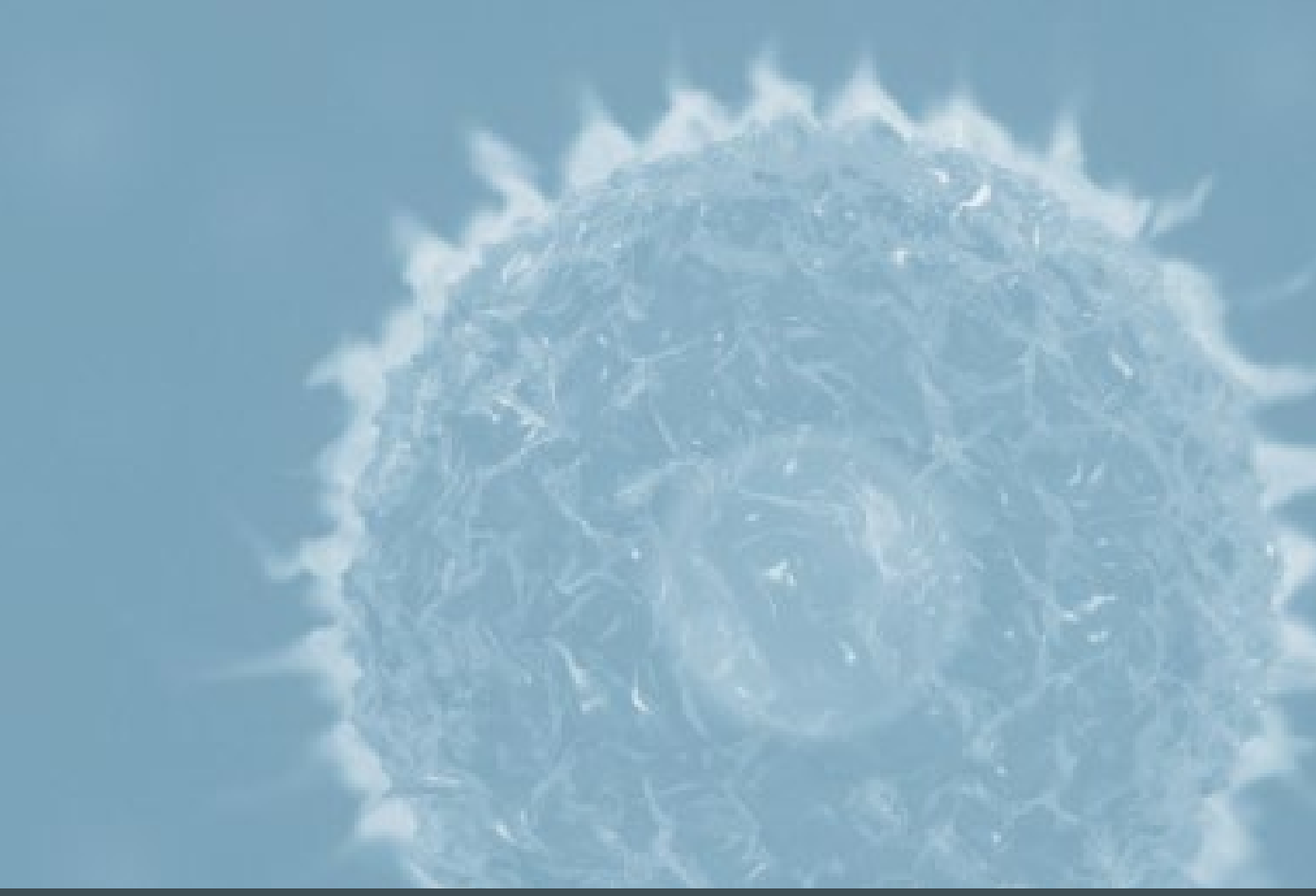

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