

EDUCATIONAL OBJECTIVES

Reproductive Endocrinology, Infertility and Ultrasound

Educational Purpose

The mission of the Department of Obstetrics & Gynecology at Columbia University is to provide the finest comprehensive training for future practitioners in our specialty by using the latest knowledge and innovative research and to provide to the community at large the highest quality of patient care. Our goal is to create a learning environment that fosters the knowledge, skills, attitudes and behaviors of physicians who exhibit the highest levels of professional competence in women's health care.

The clinical rotations in **Reproductive Endocrinology, Infertility and Ultrasound** will involve direct participation in the care of patients in the ambulatory clinic, outpatient ultrasound suites, operating room and inpatient hospital services. The resident will gain experience in the management of both routine and complicated post-operative patients and will also assist in surgical procedures, including assisted reproduction and ultrasound procedures. Didactic sessions including lectures, journal club, chapter reviews, and research meetings will supplement the core clinical experience.

Learning Objectives

We have generated the following set of educational objectives for the rotation, modified from the CREOG Educational Objectives Core Curriculum in Obstetrics and Gynecology, Eighth Edition. Residents at each PGY level must demonstrate mastery of these competencies that have been identified by the Accreditation Council for Graduate Medical Education (ACGME).

Objective 1: The resident will acquire and demonstrate knowledge about core areas in reproductive endocrinology and infertility, including:

PGY-1

1. The basic principles of hormone action including intracellular signaling pathways important for reproductive medicine
2. Laboratory assessment of reproductive hormones
3. The epidemiology, pathophysiology, usual presentation, and means of diagnosis as well as common treatment methods for the following areas encountered in reproductive medicine:
 - a. Primary and secondary infertility
 - b. Androgen excess, hirsutism and the polycystic ovary syndrome
 - c. Endocrine aspects of female infertility
 - d. Contraception
 - e. Menopause, including premature ovarian failure
 - f. Recurrent pregnancy loss

4. Reproductive genetics including normal and abnormal gametogenesis
5. Pharmacologic actions of medications frequently used in reproductive medicine including clomiphene, letrozole, metformine, and gonadotropins with or with Gn-RH agonists or antagonists, dopamine agonists, thyroid hormones, HRT including SERMs, and oral contraceptives.

PGY-2

1. Maintenance and refinement of the above areas of knowledge, and additional knowledge to include:
 - a. Disorders of sexual development
 - b. Disorders of puberty and amenorrhea
 - c. Disorders of the hypothalamic system
 - d. Disorders of the adrenal gland and the thyroid gland

PGY -3

1. Maintenance and proficiency in all the above areas of knowledge, and additional knowledge to include:
 - a. Endocrine aspects of female obesity
 - b. Endometriosis
 - c. Uterine diseases
 - d. Tubal disorders
 - e. Androgen deficiency in women
 - f. Pathophysiology of bone loss and treatment options

PGY-4

1. Maintenance and proficiency in all the above areas of knowledge, and additional knowledge to include:
 - a. Male infertility: Diagnosis and treatment
 - b. Ovulation induction for anovulatory women and unexplained infertility
 - c. Assisted reproductive technology: Clinical and laboratory aspects
 - d. Fertility preservation in cancer and reproductive aging
2. A demonstrated ability to teach all junior members of the team, including medical students, regarding the diagnosis, evaluation, treatment and complications of specific conditions encountered in reproductive endocrinology and infertility
3. Proficiency in describing the level of evidence that supports common treatment plans for infertility and reproductive endocrine conditions.
4. The ability to review and critique the current medical literature as it relates to infertility and reproductive endocrinology.

ACGME competency domains addressed: *Medical Knowledge*
Interpersonal Skills and Communication

Objective 2: *The resident will develop and demonstrate patient history-taking, diagnostic, and management-planning knowledge and skills, including:*

PGY-1

1. The ability to perform a thorough menstrual history, infertility history, history of the endocrine system, menopause history, contraceptive history, obstetric history, gynecologic history, surgical history, sexual history, psychiatric history and family history as it pertains to reproductive medicine.
2. The ability to perform a thorough physical examination, including pelvic examination, with focus on the assessment of specific disease states such as hirsutism and androgen producing tumors, body composition, pituitary tumors, thyroid problems, abnormal adrenal gland function and fibroids.
3. The appropriate use of common diagnostic endocrine and metabolic blood tests.
4. The appropriate use of highly specific diagnostic tests, such as bone density scans, pelvic MRI, pituitary MRI, ACTH stimulation test and determination of ovarian reserve with antral follicle count and measurement of specific hormones.
5. The ability to communicate the results of the history and physical examination, ultrasound findings, appropriate blood test results, and results of other specific tests by well organized written notes and oral reports.
6. The ability to develop hypotheses, diagnostic strategies and management plans in the evaluation of patients with infertility and reproductive endocrine problems.

PGY-2

1. Maintenance and refinement of the above history-taking, diagnostic and management-planning skills.
2. The ability to develop hypotheses, diagnostic strategies and management plans in patients with complex infertility or reproductive endocrine problems including the role of assisted reproductive technologies.

PGY -3

1. Maintenance and refinement of the above history-taking, diagnostic and management-planning skills.
2. The ability to develop hypotheses, diagnostic strategies and management plans in patients with infertility or reproductive endocrine problems of high complexity, including the role of assisted reproductive technologies.

PGY -4

1. Maintenance and proficiency in all of the above areas.
2. The ability to develop hypotheses, diagnostic strategies and management plans in patients with very complex reproductive endocrine problems such as 21-hydroxylase deficiency, decreased ovarian reserve, HIV positive couples who would like to conceive, and couples who may need preimplantation diagnosis because of balanced translocations or advanced maternal age.
3. The ability to perform off-service reproductive medicine consultations and communicate effectively and professionally with other services.

ACGME competency domains addressed: *Medical Knowledge*
Patient Care
Interpersonal Skills and Communication
Practice-Based Learning and Improvement

Objective 3: *The resident will acquire and demonstrate patient management skills, including:*

PGY-1

1. The ability to manage patients seeking contraception.
2. The ability to manage patients seeking treatment for menopausal symptoms, in the presence or absence of preexisting vascular disease.
3. The ability to recognize, prioritize, and institute initial treatment while immediately notifying others of life-threatening clinical emergencies encountered in the outpatient clinic (e.g. ectopic pregnancy, ovarian torsion, treatment resistant uterine bleeding, severe ovarian hyperstimulation syndrome).
4. The ability to describe the severity of disease as encountered in reproductive endocrinology and infertility, and the ability to make treatment recommendations based on this understanding, evidenced through oral presentations to the attending in the Reproductive Medicine Ambulatory Clinic and through write-ups presented at the Reproductive Medicine Conference.

PGY-2

1. Maintenance and refinement of the above patient management skills.
2. The ability to evaluate patients with uncomplicated infertility or reproductive endocrine problems (e.g. hirsutism or acne) as outpatients in the Reproductive Medicine Ambulatory Clinic.
3. The ability to manage long-term patients with polycystic ovarian syndrome and amenorrhea.
4. The ability to evaluate and manage patients seeking treatment for premature ovarian failure.
5. The ability to evaluate and manage patients in the Emergency Room with emergencies related to treatment or surgical procedures performed in reproductive medicine (e.g. ectopic pregnancy, ovarian torsion, abnormal uterine bleeding, miscarriage, mild to moderate ovarian hyperstimulation syndrome).
6. Maintenance and refinement of understanding of the severity of disease encountered in reproductive endocrinology and infertility and increasingly independent decision-making about treatment based on this understanding, evidenced through oral presentations to the attending in the Reproductive Medicine Ambulatory Clinic and through write-ups at the Reproductive Medicine Conference.

PGY -3

1. Maintenance and refinement of the above patient management skills.
2. The ability to evaluate patients with more complicated infertility or reproductive endocrine problems (e.g. polycystic ovarian disease with abnormal glucose tolerance) as an outpatient in the Reproductive Medicine Ambulatory Clinic.
3. The ability to evaluate and manage patients seeking treatment for recurrent pregnancy loss.
4. The ability to manage patients with complex menopausal problems, such as osteoporosis, atrophic vaginitis, or decreased libido.
5. The ability to evaluate and manage patients seeking treatment for chronic pelvic pain, including endometriosis.
6. The ability to evaluate and manage patients in the Emergency Room with acute emergencies related to treatment or surgical procedures performed in reproductive medicine (e.g. ruptured ectopic pregnancy, treatment resistant uterine bleeding, severe ovarian hyperstimulation syndrome).
7. Maintenance and refinement of understanding of the severity of disease encountered in reproductive endocrinology and infertility with independent decision-making about treatment based on this understanding, evidenced through oral presentations to the attending in the Reproductive Medicine Ambulatory Clinic and through write-ups presented at the Reproductive Medicine Conference.

PGY -4

1. Maintenance and proficiency in all of the above patient management skills.
2. The ability to manage patients receiving ovulation induction agents.
3. The ability to function as a supervisor in the reproductive medicine clinic.
4. Proficiency in understanding the severity of diseases encountered in reproductive endocrinology and infertility and decision-making about treatment based on this understanding, including when to refer to a specialist, evidenced through oral presentations to the attending in the Reproductive Medicine Ambulatory Clinic and through write-ups presented at the Reproductive Medicine Conference.

ACGME competency domains addressed: *Patient Care*
Interpersonal Skills and Communication
Practice-Based Learning and Improvement

Objective 4: *The resident will demonstrate understanding of, and the ability to perform, gynecologic procedures, including:*

PGY-1

1. The following basic gynecologic procedures under direct supervision:
 - a. Sonohysterogram
 - b. Hysterosalpingogram
 - c. Endometrial biopsy

2. The following uncomplicated basic gynecologic surgeries under visual supervision:
 - a. Dilation and curettage
 - b. Diagnostic hysteroscopy
 - c. Diagnostic laparoscopy
 - d. Opening and closing the abdomen for major gynecologic laparotomies

3. The use of abdominal and transvaginal ultrasound to analyze reproductive organs in various settings as outlined in the accompanying Ultrasound Skills checklist.

PGY-2

1. Maintenance and refinement of the above operative and ultrasound skills.

2. The ability to describe the accepted indications and risks for the following procedures and perform them under visual supervision:
 - a. Laparoscopy/ laparotomy to manage ectopic pregnancy, with or without evidence of rupture
 - b. Myomectomy
 - c. Operative hysteroscopy
 - d. Simple operative laparoscopy
 - e. Assisting with oocyte aspiration
 - f. Intrauterine insemination

3. The use of abdominal and transvaginal ultrasound to analyze reproductive organs in various settings as outlined in the accompanying Ultrasound Skills checklist.

PGY -3

1. Maintenance and proficiency in all of the above operative and ultrasound skills.

2. The ability to describe the accepted indications and risks for the following procedures and perform them with minimal instruction under visual supervision:
 - a. Laparoscopy with removal of a mass +/- adhesiolysis
 - b. Laparoscopy with repair of tubes for distal tubal disease
 - c. Operative versus medical management for an ectopic pregnancy

3. The ability to describe the accepted indications and risks for the following procedures and perform them at a level of technical proficiency under visual supervision:
 - a. Complex myomectomy
 - b. Complicated adhesiolysis, as encountered in severe endometriosis
4. The use of abdominal and transvaginal ultrasound to analyze reproductive organs in various settings as outlined in the accompanying Ultrasound Skills checklist.

PGY -4

1. Maintenance and proficiency in all of the above operative and ultrasound skills.
2. Mastery of the skills required to operate in an abnormal surgical field such as endometriosis, hemorrhage, etc.
3. The ability to describe the accepted indications and risks for the following procedures and perform them under visual supervision:
 - a. Tubal reanastomosis
 - b. Retrograde tubal canalization for proximal blockage
 - c. Hysteroscopic treatment of severe intrauterine adhesions
4. The ability to recognize and manage surgical complications encountered during or following:
 - a. Diagnostic and operative hysteroscopy
 - b. Diagnostic and operative laparoscopy
 - c. Laparotomy
5. The use of abdominal and transvaginal ultrasound to analyze reproductive organs in various settings as outlined in the accompanying Ultrasound Skills checklist.

ACGME competency domains addressed: *Patient Care*
Medical Knowledge
Practice-Based Learning and Improvement

Objective 5: The resident will acquire and demonstrate the ability to interact and communicate with patients in a manner that is culturally sensitive and patient-centered, including:

PGY-1

1. The ability to interact with the patient to gain her confidence and cooperation and assure her comfort, privacy, confidentiality of patient information, dignity, and modesty.
2. The ability to address sensitive issues with compassion and demonstrate sensitivity to human differences and understanding of the impact of gender, ethnic, cultural, socioeconomic and other social factors.
3. The ability to assess and counsel women for sex- and gender-appropriate reproductive options, including assisted reproduction, in a manner that is sensitive to cultural beliefs.

PGY-2

1. Maintenance and refinement of the above interpersonal and communication skills, with the demonstrated ability to communicate in a professional and empathetic manner with patients and their families, in a way that is consistent with the statements and management plans developed with the attending physicians and senior residents on the team.

PGY-3

1. Maintenance and further refinement of the above interpersonal and communication skills, with the demonstrated ability to communicate in a professional and empathetic manner with patients and their families, in a way that is consistent with the statements and management plans developed with the attending physicians and senior residents on the team.

PGY-4

1. The ability to proficiently communicate in a professional and empathetic manner with patients and their families, in a way that is consistent with the statements and management plans developed with the attending physicians on the team.
2. The ability to effectively and empathetically deliver bad news to patients and their families.

***ACGME competency domains addressed: Interpersonal and Communication Skills
Professionalism
Systems-Based Practice***

Objective 6: The resident will acquire and demonstrate the ability to interact, communicate, and work effectively with clinical and ancillary staff in inpatient, outpatient, and operating room settings, including:

PGY-1

1. The ability to share knowledge effectively with peers.
2. The ability to carry out thoughtful, respectful, and effective communication with junior and senior colleagues, nurses, and ancillary staff, in a way that fosters cooperation and patient-based care.

PGY-2

1. Maintenance and refinement of the above interpersonal and communication skills.

PGY-3

1. Maintenance and further refinement of the above interpersonal and communication skills.
2. The ability to teach junior colleagues how to carry out thoughtful, respectful, and effective communication with senior colleagues, nurses, and ancillary staff, in a way that fosters cooperation and patient-based care.

PGY-4

1. Proficiency in the above interpersonal and communication skills, with the additional ability to carry out thoughtful, respectful, and effective communication with referring physicians, in a way that fosters cooperation and patient-based care.

ACGME competency domains addressed: *Interpersonal and Communication Skills*
Professionalism
Systems-Based Practice

Objective 7: The resident will acquire and demonstrate the ability to apply knowledge and understanding gained from basic science and clinical research to support one's own education and provide accessible information to patients, by:

PGY-1

1. Developing skills (including use of information technology) required to access, then, critically assess the current medical literature.
2. Learning the appropriate application of research and/or evidence-based studies to patient care and communication.
3. Demonstrating the ability to collect, apply and synthesize patient outcome data to larger population.

PGY-2

1. Maintenance and refinement of the above skills.

PGY -3

1. Maintenance and further refinement of the above skills.

PGY -4

1. Demonstrating proficiency in the above skills.

ACGME competency domains addressed: *Interpersonal and Communication Skills*
Medical Knowledge
Practice-Based Learning and Improvement

Objective 8: The resident will acquire and demonstrate the ability to use feedback to identify areas and set goals for improvement by:

PGY-1

1. Acknowledging and accepting the limitations of one's own knowledge, understanding and clinical skills, and seeking and accepting feedback from attending physicians and senior residents.
2. Developing goals for improvement in the above areas, commensurate with expectations for PGY-1, with senior members of the team and showing evidence of improvement in above identified areas within an agreed upon time frame.

PGY-2

1. Acknowledging and accepting the limitations of one's own knowledge, understanding and clinical skills, and seeking and accepting feedback from attending physicians and senior residents.
2. Developing goals for improvement in the above areas, commensurate with expectations for PGY-2, with senior members of the team and showing evidence of improvement in above identified areas within an agreed upon time frame.

PGY -3

1. Acknowledging and accepting the limitations of one's own knowledge, understanding and clinical skills, and seeking and accepting feedback from attending physicians and senior residents.
2. Developing goals for improvement in the above areas, commensurate with expectations for PGY-3, with senior members of the team and showing evidence of improvement in above identified areas within an agreed upon time frame.

PGY -4

1. Acknowledging and accepting the limitations of one's own knowledge, understanding and clinical skills, and seeking and accepting feedback from attending physicians, peers and clinical partners.
2. Developing goals for improvement in the above areas, commensurate with expectations for PGY-4, independently and with senior members of the team and showing evidence of improvement in above identified areas within an agreed upon time frame.

***ACGME competency domains addressed: Professionalism
Practice-Based Learning and Improvement***

Objective 9: The resident will demonstrate the ability to conduct oneself in a professional manner by:

PGY-1

1. Demonstrating personal integrity; altruism; a commitment to ethical principles pertaining to the provision of clinical care, such as autonomy, benevolence, and nonmalfeasance; and a commitment to ethical behavior in all other aspects of professional practice.
2. Exhibiting dependability, responsibility, and self-respect.

PGY-2

1. Demonstrating personal integrity; altruism; a commitment to ethical principles pertaining to the provision of clinical care, such as autonomy, benevolence, and nonmalfeasance; and a commitment to ethical behavior in all other aspects of professional practice.
2. Exhibiting dependability, responsibility, and self-respect.

PGY -3

1. Demonstrating personal integrity; altruism; a commitment to ethical principles pertaining to the provision of clinical care, such as autonomy, benevolence, and nonmalfeasance; and a commitment to ethical behavior in all other aspects of professional practice.
2. Exhibiting dependability, responsibility, and self-respect.

PGY -4

1. Demonstrating personal integrity; altruism; a commitment to ethical principles pertaining to the provision of clinical care, such as autonomy, benevolence, and nonmalfeasance; and a commitment to ethical behavior in all other aspects of professional practice.
2. Exhibiting dependability, responsibility, and self-respect.

ACGME competency domains addressed: Professionalism

Objective 10: The resident will demonstrate knowledge of important systems and regulatory requirements of medical training and practice; and demonstrate adeptness in using the system of care in a way that is beneficial and vital for excellent patient care, including:

PGY-1

1. Using available system resources to respond to medical errors, should they arise, in an appropriate and timely manner.
2. Demonstrating familiarity with the requirements of the American Board of Obstetrics and Gynecology.
3. Demonstrating knowledge of, and completing all, hospital/university-mandated and regulatory-agency documentation, including:
 - a. Documentation of participation in all surgeries and procedures in the ACGME case log system and completion of Surgical Skills Competency Forms.
 - b. Documentation of all pertinent ambulatory patient encounters in the ACGME case log system
 - c. Completion of all discharge summaries for Sloane patients on the Reproductive Endocrinology and Infertility service.
4. Demonstrating adherence to NYS and ACGME work rules and regulations.
5. Demonstrating knowledge of the process and system for evaluating faculty and programs, including:
 - a. Completion of all electronic evaluations for the Reproductive Endocrinology and Infertility rotation in the E*value system.
 - b. Completion of medical student evaluations for every student encountered during the rotation.

****The above tasks must be completed within one week after completion of the rotation****

PGY-2

1. Continuing to demonstrate knowledge and adherence to all the above requirements.

PGY -3

1. Continuing to demonstrate knowledge and adherence to all the above requirements.

PGY -4

1. Continuing to demonstrate knowledge and adherence to all the above requirements, as well as provide guidance for junior residents in these areas.

***ACGME competency domains addressed: Professionalism
Systems-Based Practice***

Objective 11: The resident will demonstrate the ability to work on original research by:

PGY-1

1. Developing skills required to assess reports in medical literature.

PGY-2

1. Maintaining and refining skills required to assess reports in medical literature.

PGY-3

1. Maintaining and refining skills required to assess reports in medical literature.
2. Identifying an area of research interest and pursuit of an original project with faculty guidance.
3. Preparing for the option/or possibility of fellowship training.
4. Presenting original research to the department at the Sloane Academic Assembly as well as national meetings and/or publication of original research project in peer reviewed journals.

PGY-4

1. Maintaining and refining skills required to assess reports in medical literature.
2. Continuing to work on an original research project.
3. Presenting original research at national meetings and/or publication of original research project in peer reviewed journals.

ACGME competency domains addressed: Medical Knowledge

Objective 12: The resident will develop and demonstrate teaching skills by:

PGY-1

1. Training and providing assistance in teaching medical students.

PGY-2

1. Assisting in the supervision and teaching of PGY-1 residents and medical students.
2. Providing informal and interactive teaching with colleagues in other areas in the knowledge of obstetrics and gynecology.

PGY -3

1. Assisting in the supervision and teaching of PGY-1 and PGY-2 residents and medical students.
2. Providing informal and interactive teaching with colleagues in other areas in the knowledge of obstetrics and gynecology.

PGY -4

1. Providing leadership in teaching and supervising first- and second-year residents and medical students.
2. Continuing to provide informal and interactive teaching with colleagues in other areas in the knowledge of obstetrics and gynecology.
3. Providing effective feedback and mentorship for first through third year residents in all aspects of resident training and performance.

ACGME competency domains addressed: *Medical Knowledge*
Interpersonal Skills and Communication

Resident Supervision

This set of learning objectives is designed to communicate clearly what is expected in terms of the knowledge, skills, and attitudes that ideally would be acquired during the **Reproductive Endocrinology, Infertility and Ultrasound** rotation by all residents.

The faculty believes that superior resident education requires the opportunity for decision making by the resident staff as their level of training and knowledge allows. All decisions will be evaluated by the attending physicians who act as supervisors in the Reproductive Medicine Clinic. Residents are encouraged to make decisions on their patients with the help of the fellows and faculty. An attending physician is available for consultation and/ or direct supervision at all times, including nights, weekends and holidays.

Resident Responsibilities

In addition to the educational component of the rotation, certain administrative duties are incumbent upon house officers on each clinical service. The department expects that residents will attend to these administrative tasks with equal diligence and attention to detail. Teamwork and collegiality are key elements to successfully completing these duties in an efficient manner, while emphasizing learning and excellent patient care. The following guidelines have been created by the chief residents in the department to delineate the responsibilities of each team member on the service.

*The resident on the **REI and Ultrasound** rotation should:*

1. Attend Sloane REI Clinic as indicated on the accompanying rotation schedule.
2. Attend Ultrasound sessions at the times and sites indicated on the accompanying rotation schedule.
3. Assist with HSGs in Milstein on Fridays, when scheduled.
4. Complete the skills outlined in the accompanying Ultrasound Skills checklist for the appropriate PGY level and submit the completed checklist to the Residency Coordinator at the end of the rotation.
5. Complete the skills/ lab outlined in the accompanying Minimally Invasive Surgical Curriculum for the appropriate PGY level and submit the completed checklist to the Residency Coordinator at the end of the rotation.
6. Attend weekly didactic sessions on Thursday morning and TGIF Conference on Friday morning.
7. Attend weekly continuity clinic session.

Recommended Reading and Educational Materials

Essential Reproductive Medicine

by Bruce R. Carr, Richard E. Blackwell, and Ricardo Azziz, eds.

Clinical Gynecologic Endocrinology and Infertility

by Leon Speroff and Marc A. Fritz, eds. (selected chapters)

Yen and Jaffe's Reproductive Endocrinology

by J. Strauss and R. Barbieri, eds. (selected chapters)

All ACOG Compendium Bulletins pertaining to Reproductive Endocrinology and Infertility

Precis on Reproductive Endocrinology and Infertility

PROLOG on Reproductive Endocrinology and Infertility

Articles of interest from the journals *Human Reproduction* and *Fertility and Sterility*

Method of Evaluation

1. A Surgical Skills Competency Form should be completed by the resident and attending physician involved on every procedure performed during the rotation. Residents should receive timely formative feedback from the attending physician(s) during this rotation. All forms should be submitted to the Residency Coordinator on a weekly basis. These will be maintained in the resident's portfolio and reviewed by the program directors and heads of service at regular intervals.
2. Global 360° evaluations of residents are performed at the completion of each five week block and reflect input from faculty members, nurses, physician extenders, patients, peers and medical students. These evaluations will be available to residents via the E*value electronic system. These evaluations will be reviewed with the program directors during the resident's semi-annual evaluation meeting, and at interim points if deemed necessary.
3. Cognitive assessment of the resident's medical knowledge is achieved by the relevant scores on the CREOG In-Training examination.