Reproductive Endocrinology/Infertility Rotations

PGY-I

COMPETENCY 1. Patient Care,
Provide patient centered care that is compassionate, appropriate, and effective for the
treatment of health problems and the promotion of health.

Residents must be able to:

- communicate effectively and demonstrate caring and respectful behaviors when
  interacting with patients and their families.
- gather essential and accurate information about their patients;
- make informed decisions about diagnostic and therapeutic interventions based on
  patient information and preferences, up-to-date scientific evidence, and clinical
  judgment;
- develop and carry out patient management plans;
- counsel and educate patients and their families;
- use information technology to support patient care decisions and patient educations’
- competently perform all medical and invasive procedures considered essential for the
  area of practice;
- provide health care services aimed at preventing health problems or maintaining
  health;
- work with health care professionals, including those from other disciplines, to
  provide patient-focused care.

At the conclusion of the first two year, the resident should be able to:

- Understand and know the menstrual cycle
- Understand the hypothalamic pituitary-ovarian feedback mechanism
- Evaluate, discuss and outline treatment for patients with:
  → Amenorrhea
  → Infertility
  → Menopause
  → Endocrinology of pregnancy
  → Abnormal uterine bleeding
  → Ednometriosis
  → Dysmenorrhea
  → Oligomenorrhea
  → Anovulation
  → Premature ovarian failure
Steroid contraceptives
Date an endometrial biopsy

• Perform:
  → Hysteroscopy
  → Laparoscopy
  → Transvaginal ultrasound
  → Postcoital test
  → Endometrial biopsy

COMPETENCY 2. Medical Knowledge.
Understand the scope of established and evolving biomedical, clinical and cognate sciences, as well as the application of this knowledge to patient care.

Residents expected to:

• demonstrate an investigatory and analytic thinking approach to clinical situations;
• know and apply the basic and clinically supportive sciences which are appropriate to their discipline.

At the conclusion of the first year, the resident should know:

A. Basic Science/Mechanism of Disease
   Genetics

   1. Describe the genetics basis of the following conditions:
      a. Normal and abnormal Müllerian development
      b. Disorders of androgen excess
      c. Repetitive pregnancy loss
      d. Ambiguous genitalia

   Physiology

   1. Describe the physiology of:
      a. The hypothalamic-pituitary-ovarian axis
      b. Adrenal steroid and catecholamine synthesis
      c. The thyroid gland and thyroid hormone synthesis
      d. Female and male gametogenesis
      e. Hormonally regulated tissue receptors
      f. Bone formation/resorption

   2. Describe the normal process of steroid hormone biosynthesis
   3. Describe the relationship between ovarian and adrenal androgen production and hyperinsulemia
   4. Describe the physiology of the normal menstrual cycle
5. Describe the physiologic changes that occur at the time of puberty and menopause

Embryology and Developmental Biology
1. Describe the normal embryology of Mullerian development
2. Describe the pathogenesis of abnormal Mullerian development
3. Describe the pathogenesis of disorders of sexual differentiation

Anatomy
1. Describe the normal and abnormal reproductive tract anatomy visualized grossly, hysteroscopically and laparoscopically
2. Describe the anatomic changes that occur to the reproductive organs and breasts at the time of puberty and menopause

Pathology and Neoplasia
1. Describe the histologic appearance of endometriosis
2. Describe the histologic changes of the endometrium associated with:
   a. The normal menstrual cycle
   b. Ovulation-inducing or ovulation-inhibiting agents
   c. Chronic Anovulation
3. Describe the histologic appearance of the ovary:
   a. In its normal state
   b. In androgen-excess disorders, such as polycystic ovary syndrome and hyperthecosis

A. Pediatric and Adolescent Gynecology
   Precocious Puberty
1. Define precocious puberty
2. Describe the principal causes of precocious puberty
3. Perform a history and a focused physical examination to evaluate the diagnosis of precocious puberty
4. Interpret the results of selected tests to evaluate precocious puberty, such as:
   a. Ultrasonography
   b. Gonadotropin assays
   c. X-ray studies to determine bone age
   d. CT or MRI scans
5. Describe the treatment and long-term prognosis for patients with precocious puberty

Adolescent Gynecology
1. Discuss the diagnosis and management of gynecologic issues often experiences by adolescent women, such as:
   a. Normal and abnormal pubertal development
   b. Normal psychosocial development
   c. Pituitary disorders
   d. Primary amenorrhea
   e. Breast mass
   f. Menstrual irregularities
   g. Dysmenorrhea
   h. Vulvovaginitis
i. Sexuality
j. Contraceptive needs
k. Sexually transmitted diseases
l. Pregnancy
m. Sexual abuse
n. Ovarian diseases and masses
o. Endometriosis
p. Chronic pelvic pain
q. Ultrasonography

2. Elicit a pertinent medical and sexual history from an adolescent patient
3. Perform a physical examination with special attention to the needs of an adolescent patient
4. Provide for the primary care needs of the adolescent, demonstrating knowledge in areas, such as:
   a. Psychological health
   b. Immunizations
   c. Confidentiality issues
   d. Facilitation of parent-child communication
   e. Safety and prevention of morbidity and mortality
   f. Substance abuse
   g. Nutrition and dietary management
5. Provide patient and parent education in the following areas:
   a. Normal anatomic and psychosocial development
   b. Personal hygiene
   c. Menses
   d. Sexuality
   e. Prevention of pregnancy and STDs
   f. Psychosocial concerns
6. Perform or interpret selected tests to confirm the diagnosis of specific gynecologic disorders in an adolescent patient, such as:
   a. Microbiologic tests
   b. Endocrinologic assays
   c. Ultrasonography, sonohysterography, hysterosalpingography, hysteroscopy, laparoscopy
   d. CT or MRI
7. Treat adolescent gynecologic disorders medically or surgically
8. Describe the indications for referral
9. Counsel the patient and her family about the long-term prognosis of her condition

Delayed Puberty
1. Understand the principal causes of delayed puberty
2. Describe the history of a patient with delayed puberty
3. Perform a physical examination and interpret tests to evaluate the etiology of delayed puberty, such as:
   a. Vaginal cytology
   b. X-rays for bone age
c. Endocrinologic assays
d. Peripheral blood karyotype
e. CT scan or MRI of the head

4. Describe the treatment of a patient with delayed puberty
5. Describe the indications for referral
6. Counsel a patient and her family about her long-term follow-up and prognosis and the effect of her condition on reproduction

B. Menstrual and Endocrine Disorders

Dysmenorrhea
1. Describe the classification of dysmenorrhea (ie, primary versus secondary)
2. List the principal causes of primary and secondary dysmenorrhea
3. Elicit a pertinent history to evaluate dysmenorrhea
4. Perform a focused physical examination to evaluate dysmenorrhea
5. Perform and/or interpret selected tests to evaluate dysmenorrhea, such as:
   a. Microbiologic cultures of the genital tract
   b. Endometrial biopsy
   c. Pelvic ultrasonography/saline infusion ultrasonography
   d. Hysteroscopy
   e. Laparoscopy
   f. CT
   g. MRI
6. Treat dysmenorrhea medically/surgically
7. Describe the long-term follow-up and prognosis for a patient with dysmenorrhea

Dysfunctional Uterine Bleeding
a. See Gynecology Section (Competency 2, section B, Abnormal/Dysfunctional Uterine Bleeding)

Amenorrhea
1. Describe the classification of amenorrhea (ie, primary versus secondary)
2. List the major causes of primary and secondary amenorrhea
3. Elicit a pertinent history to evaluate amenorrhea
4. Perform a focused physical examination to evaluate amenorrhea
5. Perform and interpret selected diagnostic tests to evaluate amenorrhea, such as:
   a. Hysteroscopy
   b. Hysterosalpingography (HSG)
   c. Ultrasonography/saline infusion ultrasonography
6. Interpret other diagnostic tests such as:
   a. Serum and urine hCG assay
   b. Serum gonadotropin assays
   c. Throis-stimulating hormone assay
   d. Prolactin assay
   e. Progestin challenge test
   f. Dexamethasone suppression test
   g. Corticotropin stimulation test
   h. Peripheral blood karyotype
i. CT or MRI
7. Treat amenorrhea medically/surgically
8. Describe the long-term follow up for a patient with amenorrhea, focusing particularly on the risks for endometrial hyperplasia and hypoestrogenism

Premenstrual Syndrome
1. Describe the diagnostic criteria for premenstrual syndrome (PMS)
2. List the possible causes of PMS
3. Elicit a pertinent history to evaluate PMS
4. Describe the differential diagnosis of PMS
5. Treat PMS with interventions, such as:
   a. Psychosocial support or referral
   b. Counseling about lifestyle changes
   c. Medication

Polycystic Ovary Syndrome (PCOS)
1. Describe the clinical features of PCOS
2. Describe the genetic and environmental factors contributing to the pathogenesis of PCOS
3. Elicit a pertinent history to evaluate PCOS
4. Perform a focused physical examination to evaluate PCOS
5. Perform and/or interpret selected tests to determine the diagnosis
   a. Serum testing, including ovarian, adrenal and pituitary hormone assays and insulin resistance
   b. Pelvic ultrasonography
6. Describe the medical and/or surgical treatment for PCOS in patients who do not desire pregnancy and require ovulation induction
7. Describe the medical and/or surgical treatment for PCOS in patients who do desire pregnancy and require ovulation induction
8. Describe the indications for referral for consultation
9. Describe the long-term follow up for an affected patient including consultation about effects on reproduction and risk of cancer and cardiovascular disease

10. Management of Climacteric Period

C. Management of Climacteric Period
   Evaluation
1. Describe typical symptoms experienced by a woman at the time of menopause
2. Perform a focused physical examination of a menopausal patient
3. Interpret selected laboratory tests to evaluate menopause
4. Assess the risk of osteoporosis by history, examination, and testing
5. Interpret the results of other screening tests that should be performed in menopausal patients (outlined in “Periodic Health Assessments” in Primary and Preventive Ambulatory Health Care).

Management
1. Manage premenopausal and menopausal conditions, including osteoporosis, using interventions, such as:
a. Hormone therapy (estrogen, progestins, selective estrogen receptor modulators)
b. Calcium and vitamin supplementation
c. Behavioral and lifestyle modifications
d. Dietary alterations
e. Medications that preserve/build bone mass

2. Describe the implications of non-hormonal and alternative therapies, such as acupuncture and herbal supplements
3. Describe the long-term follow up indicated for menopausal patients
4. Counsel patients regarding physical, emotional and relationship-based issues concerning female sexuality and aging

**COMPETENCY 3. Practice-based Learning and Improvement.**
Demonstrate knowledge, skills and attitudes needed for continuous self-assessment that includes the investigation and evaluation of care for patients, the appraisal and assimilation of scientific evidence, and improvements in one's patient care practice.

Residents are expected to:

- analyze practice experience and perform practice-based improvement activities using a systematic methodology;
- locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems;
- obtain and use information about their own population of patients and the larger population from which their patients are drawn;
- apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness;
- use information technology to manage information, access on-line medical information and support their own education;
- facilitate the learning of students and other health care professionals.
- attend the didactic lectures
- attend and participate in the antepartum and cesarean section conferences
- participate in the Residents Study Groups

**COMPETENCY 4. Interpersonal and Communication Skills.**
Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.

Residents are expected to:

- create and sustain a therapeutic and ethically round relationship with patients;
use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills;
work effectively with others as a member or leader of a health care team or other professional group.

COMPETENCY 5. Professionalism.
Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

Residents are expected to:

- demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development;
- demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices;
- demonstrate sensitivity and responsiveness to patients’ culture, age, gender, and disabilities

COMPETENCY 6. System-Based Practice.
Understand how to practice quality health care and advocate for patients as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Residents are expected to:

- understand how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice;
- know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources;
- practice cost-effective health care and resource allocation that does not compromise quality of care;
- advocate for quality patient care and assist patients in dealing with system complexities
- know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance
At the conclusion of the fourth year of rotations, the resident should be able to complete the goals and competency requirements of the first year residents in addition to the following:

- Meet all the learning objectives for the first year residents
- Evaluate, discuss and outline a treatment plan for patients with:
  - Prolactin excess symptoms
  - Gonadal dysgenesis
  - Hirsutism
  - Precocious and delayed puberty
  - Abnormal genital tract development
  - Sexual ambiguity
  - IVF
  - Recurrent abortion
  - Uterine anomalies
In utero DES exposure
→ Premenstrual syndrome

- Perform and assist:
  → Diagnostic and operative laparoscopy
  → Diagnostic and operative hysteroscopy
  → Laser vaporization
  → Tubal anastomosis
  → Lysis of adhesions (adhesiolysis)
  → Tuboplasty
  → Metroplasty
  → Myomectomy
  → Laparotomy
  → Ovarian cystectomy
  → Excision of endometriosis
  → Hysterosalpingogram

COMPETENCY 2. Medical Knowledge.
Understand the scope of established and evolving biomedical, clinical and cognate sciences, as well as the application of this knowledge to patient care.

Residents are expected to:

- demonstrate an investigatory and analytic thinking approach to clinical situations;
- know and apply the basic and clinically supportive sciences which are appropriate to their discipline.

At the conclusion of the fourth year, the resident should know:
A. Basic Science/Mechanisms of Disease
   Genetics
   1. Describe the principles of preimplantation genetic diagnosis
   Anatomy
   1. Describe and interpret normal and abnormal reproductive tract anatomy visualized by imaging procedures, such as:
      a. Hysterosalpingography (HSG)
      b. Pelvic ultrasonography/saline infusion ultrasonography
      c. CT
      d. MRI
   2. Describe the anatomic appearance of Mullerian abnormalities
   3. Describe the anatomic abnormalities that occur in patients with disorder of sexual differentiation
   4. Describe the anatomy of the central nervous system as it relates to menstrual function
   Pharmacology
   1. Describe the pharmacology of medications used to:
      a. Induce ovulation
b. Inhibit ovulation (eg, gonadotropin-releasing hormone analogies, steroid contraceptives)
c. Inhibit the effects of prostaglandins

2. Describe the pharmacology of hormone therapy and selective estrogen receptor modulators

3. Describe the pharmacology of medications used to inhibit bone resorption and stimulate bone formation

Microbiology and Immunology
1. Describe the possible effect of pathogenic vaginal organisms on the composition of cervical mucus
2. Describe histologic alterations in the endometrium and fallopian tubes associated with infection and their effect on fertility
3. Describe immunologic causes of infertility

B. Pediatric and Adolescent Gynecology

Pediatric Gynecology (Birth to Menarche)
1. Describe gynecologic problems experienced by pediatric patients such as:
   a. Vulvovaginitis
   b. Vulvar disease
   c. Prepubertal vaginal bleeding
   d. Trauma
   e. Foreign body in the vagina
   f. Sexual abuse
   g. Abnormal pubertal development
   h. Ambiguous genitalia

2. Elicit a pertinent history and focused physical examination appropriate for the patient’s age, including
   a. Demonstration of correct use of equipment
   b. Positioning
   c. Adjuncts to examination

3. Perform and/or interpret selected tests to diagnose a specific gynecologic disorder in a pediatric patient:
   a. Microbiologic cultures of the lower genital tract
   b. Vaginoscopy
   c. Vaginal wall lavage
   d. Ultrasonography
   e. MRI

4. Understand the medical and surgical treatment of pediatric gynecologic disorders
5. Understand the indications for referral to a sub-specialist
6. Counsel the patient and her family about long-term prognosis and the effect of specific conditions on reproduction
7. Perform a forensic examination (including appropriate laboratory tests) to evaluate sexual abuse
   a. Describe the standards for diagnosis of sexual abuse and for maintenance of the chain of evidence
   b. Describe the mandated reporting law for sexual abuse in the physician’s practice location
c. Collaborate with appropriate health professionals regarding the follow-up of pediatric patients evaluated for sexual abuse

**Developmental Anomalies of the Urogenital Tract**

1. Describe the major developmental anomalies and their implications for sexual function, menstruation, fertility, and reproductive outcome, including:
   a. Hymenal abnormalities
   b. Vaginal agenesis with or without a uterus
   c. Vaginal septum
   d. Uterine septum
   e. Unicornuate or bicornuate uterus

2. Describe the features of a patient’s history suggestive of a developmental anomaly of the urogenital tract

3. Perform a focused physical examination to identify developmental anomalies of the urogenital tract and associated somatic anomalies

4. Interpret the following tests to confirm the diagnosis of a developmental anomaly, its etiology, and its potential clinical implications:
   a. Ultrasoundography, sonohysterography, hysterosalpingography, hysteroscopy, laparoscopy
   b. Endocrinologic assays
   c. Microbiologic tests
   d. Peripheral blood karyotype assessment
   e. CT or MRI
   f. Examination under anesthesia

5. Describe appropriate medical and surgical treatments for patients with developmental anomalies

6. Counsel patients and their families about the impact of genital tract anomalies on reproduction

7. Describe the indications for referral

**Galactorrhea/Hyperprolactinemia**

1. Describe the causes of galactorrhea/hyperprolactinemia

2. Elicit a pertinent history to evaluate galactorrhea/hyperprolactinemia

3. Perform a targeted physical examination to evaluate galactorrhea/hyperprolactinemia

4. Order and interpret selected diagnostic studies including:
   a. Serum Prolactin
   b. Serum TSH
   c. CT or MRI of pituitary

5. Treat galactorrhea/hyperprolactinemia

6. Describe the indications for referral to a neurosurgeon for surgical treatment of a pituitary adenoma

7. Describe the long-term follow up for the patient with galactorrhea/hyperprolactinemia/pituitary adenoma focusing particularly on the risk of complications, such as:
   a. Headaches
   b. Visual field defects
   c. Infertility
   d. Hypoestrogenism
8. Describe the management of patients with pituitary adenoma in pregnancy

Hirsutism
1. Describe the principal causes of Hirsutism
2. elicit a pertinent history to evaluate Hirsutism
3. Perform a focused physical examination to evaluate Hirsutism
4. Perform and interpret selected tests to determine the etiology of Hirsutism
5. Treat hirsutism with medical/surgical interventions
6. Describe the indications for referral
7. Describe the long-term follow up for an affected patient and counsel her about possible effects on reproduction

Recurrent Pregnancy Loss
1. Describe the most common causes of recurrent first and mid-trimester pregnancy loss
2. Elicit a pertinent history in a patient with recurrent first and mid-trimester pregnancy losses including issues such as:
   a. Family history and pedigree analysis
   b. Detection of underlying medical disorders
   c. Exposure to toxins
   d. Identification of a hereditary thrombophilia
3. Perform a focused physical examination to identify possible causes of recurrent first and mid-trimester pregnancy loss, such as:
   a. Genital tract malformations
   b. Galactorrhea
4. Perform and interpret the results of selected diagnostic tests to determine the etiology of recurrent early pregnancy loss, for example:
   a. Microbiologic cultures of the genital tract
   b. Hysteroscopy
   c. Endometrial biopsy
   d. Pelvic ultrasonography
   e. Hysterosalpingography
5. Interpret the results of other diagnostic tests, such as:
   a. Serum Prolactin
   b. Thyroid function tests
   c. Serologic tests for autoimmune or connective tissue diseases
   d. Tests for thrombophilias
6. Treat patients with a history of recurrent pregnancy loss with surgical or nonsurgical methods depending on etiology
7. Counsel patients about the prognosis for successful treatment of recurrent pregnancy loss

C. Infertility Evaluation
1. Describe the classification of infertility (ie, primary versus secondary)
2. List the principal causes of primary and secondary infertility
3. Elicit a pertinent history to evaluate infertility
4. Perform a focused physical examination to evaluate infertility
5. Perform and/or interpret selected diagnostic tests to determine the most likely cause of infertility, such as:
a. Basal body temperature chart
b. Serum assays of:
   • Luteal phase progesterone
   • Thyroid function
   • Prolactin
   • Pituitary and ovarian hormones
c. Microbiologic cultures of the genital tract
d. Endometrial biopsy and histology
e. Pelvic ultrasonography/saline infusion ultrasonography
f. Hysterosalpingography
g. Semen analysis and culture

6. Treat infertile patients who have irregular ovulation with nongonadotropin therapy, such as:
   a. Clomiphene citrate
   b. Glucocorticoids
   c. Insulin-sensitizing agents

7. Perform selected surgical procedures to correct conditions that cause infertility, such as:
   a. Lysis of pelvic adhesions
   b. Resection of endometriomas/endometriotic implants

8. Describe the indications for referral to a subspecialist for treatment (eg. gonadotropin therapy, assisted reproductive technologies (ART))

9. Counsel patients regarding about the long-term prognosis for their condition, and alternatives to childbearing, such as adoption, donor gametes, surrogate pregnancy

10. Counsel patients regarding sexual activity during fertility treatment

Reproductive Technologies
1. Describe the indications for ART procedures, such as:
   a. In vitro fertilization (IVF)
   b. Gamete intrafallopian transfer (GIFT)
   c. Zygote intrafallopian transfer (ZIFT)
   d. Intracytoplasmic sperm injection (ICSI)
   e. Gamete donation
   f. Preimplantation genetic diagnosis

2. Describe the prognosis for, and complications of, ART

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Demonstrate knowledge, skills and attitudes needed for continuous self-assessment that includes the investigation and evaluation of care of patients, the appraisal and assimilation of scientific evidence, and improvements in one’s patient care practice.

Residents are expected to:
• analyze practice experience and perform practice-based improvement activities using a systematic methodology;
• locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems;
• obtain and use information about their own population of patients and the larger population from which their patients are drawn;
• apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness;
• use information technology to manage information, access on-line medical information and support their own education;
• facilitate the learning of students and other health care professionals
• attend the didactic lectures
• attend and participate in the antepartum and cesarean section conferences
• attend journal clubs/clinical expert series
• participate in the Residents Study Groups

Residents are expected to:

• create and sustain a therapeutic and ethically sound relationship with patients;
• use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills;
• work effectively with others as a member or leader of a health care team or other professional group.

Residents are expected to:

• demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development;
• demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices;
• demonstrate sensitivity and responsiveness to patients’ culture, age, gender, and disabilities

COMPETENCY 4. Interpersonal and Communication Skills.
Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.

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Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.
COMPETENCY 6. System-Based Practice.
Understand how to practice quality health care and advocate for patients as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

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- know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources;
- practice cost-effective health care and resource allocation that does not compromise quality of care;
- advocate for quality patient care and assist patients in dealing with system complexities;
- know how to partner with health care manager and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance.