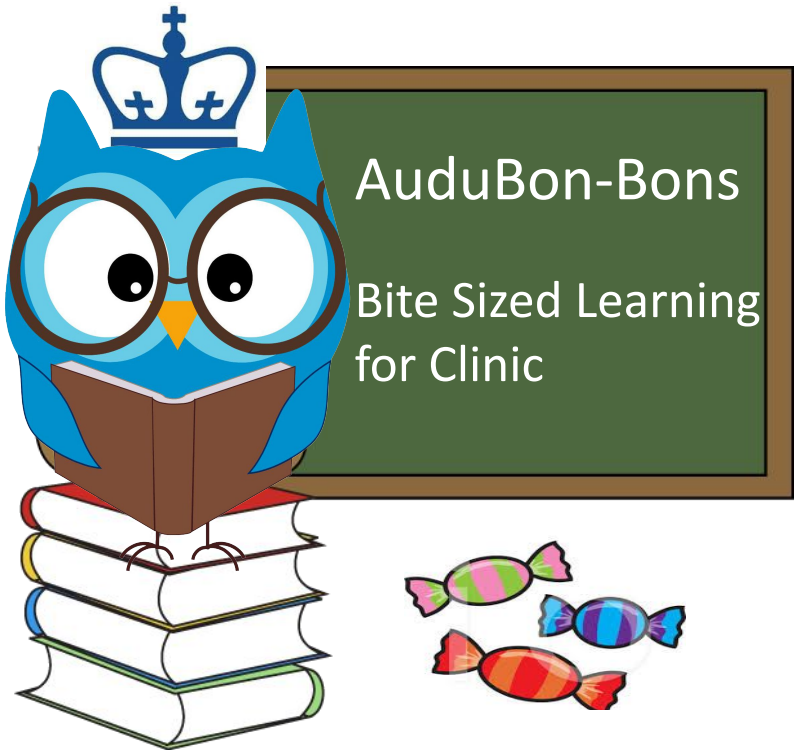
INFERTILITY EVALUATION



Week 7

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Reading Assignment:
Infertility workup for the women's health specialist. CO 781.

LEARNING OBJECTIVES

- To understand the definition of infertility
- To review the approach to a patient with infertility
- To counsel patients on initial evaluation for infertility

CASE VIGNETTE

- Ms. Nobabies is a 37 yo G0 woman who presents for her annual exam and has no complaints.
- When you ask about contraceptive use, she replies she stopped the birth control pills she had been using for "as long as she could remember" 8 months ago as she and her partner decided they were ready to "try".

FOCUSED HISTORY

- **What elements of this patient's history are most relevant?**
  - **PMH:** Seasonal allergies
  - **PSH:** Wisdom teeth
  - **POBH:** G0
  - **PGYNH:** Regular menses on OCPs. **Irregular since stopping 8 months ago.** Denies abnormal paps or STIs. Denies history of fibroids or cysts.
  - **MEDS:** PNV
  - **All:** NKDA
  - **FH:** Mother has HTN, father with DMII
  - **SH:** Married and partner has been supportive. Denies tob, drug use. Social EtOH use. Denies IPV. Works as a teacher's aide. Accept blood products.

PERTINENT PHYSICAL EXAM FINDINGS

What elements of this patient's physical exam are most relevant?

VSS: BP: 130/88, HR: 88, **BMI: 31**

- **General:** Well-appearing woman, VSS
- **HEET:** Normal neuro exam, **no thyromegaly, some dark hair along upper lip**
- **Skin:** No rashes, **some acne on chin, and upper chest. Darkening of skin along upper back and neck**
- **CV:** RRR
- **Pulm:** CTAB
- **Breasts:** Examined in 2 positions, no visible or palpable lesions, no skin dimpling or retractions, no nipple discharge
- **Abd:** Soft, non-tender, no palpable masses
- **Pelvic:** Normal external genitalia, physiologic discharge, no blood in vaul cervix, no lesions
- **BME:** AV, mobile, small uterus

INFERTILITY

What is the definition of infertility?

- Failure to achieve pregnancy within **12 months** of unprotected intercourse or donor insemination in **women under 35**
- OR **6 months for women over 35**

How common is it?

- Impacts **15%** of couples

What percent is attributed to the male factor?

- **40-50%**

IMMEDIATE EVALUATION

- **What are the conditions that should prompt an immediate evaluation to be undertaken?**

  - Oligomenorrhea or amenorrhea
  - Known or suspected uterine, tubal or peritoneal disease
  - Stage III or stage IV endometriosis
  - Known or suspected male factor infertility

FIRST STEPS

Table 1. Basic Infertility Evaluation

Female		
History		
Physical		
Prepregnancy evaluation*		
Additional evaluation for etiology of infertility	Diminished ovarian reserve	• Antimüllerian hormone or basal follicle-stimulating hormone plus estradiol • Transvaginal ultrasonography with antral follicle count
	Ovulatory dysfunction	Ovulatory function test (eg, serum progesterone measurement)
	Tubal factor	• Hysterosalpingography • Hysterosalpingo-contrast sonography
	Uterine factor	• Transvaginal ultrasonography • Sonohysterography • Hysteroscopy • Hysterosalpingography
Male		
History		
Semen analysis		

*See the following document for guidance on prepregnancy evaluation: Prepregnancy counseling. ACOG Committee Opinion No. 762. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;133:e78–89.

https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/06/infertility-workup-for-the-womens-health-specialist

INITIAL EVALUATION- HISTORY

What history should be obtained from any patient presenting with infertility ?

- Duration of infertility, and any previous evaluations
- Menstrual history, including signs of ovulation
- Pregnancy history including terminations
- Previous methods of contraceptives used
- Intercourse frequency and any sexual dysfunction
- Past surgical history
- Past GYN history including STDs, endometriosis, fibroids
- Complete review of medical history
- Current meds, supplement usage, and environmental exposures
- Drug, tobacco, or alcohol use
- Family history of infertility, early menopause, developmental delay or birth defects

INITIAL EVALUATION- PHYSICAL

What are key findings in the physical exam when evaluating a patient with infertility ?

- BMI, BP
- Thyroid enlargement, tenderness or nodules
- Breast secretions
- Signs of androgen excess (hirsuitism, acne, acanthosis nigricans)
- Vaginal or cervical abnormalities (discharge, anatomical abnormalities)
- Uterine abnormalities (absence of uterus, bulky from fibroids, tenderness, retroverted)
- Adnexal or cul-de-sac masses or tenderness

NEXT STEPS IN EVALUATION

1. Assess for **diminished ovarian reserve**. How?

   - AMH <1
   - Antral follicle count <5-7
   - FSH >10

What are the causes of diminished ovarian reserve?

- Age
- Primary ovarian insufficiency
  - Consider fragile X carrier screening to rule out FMR1 premutation

NEXT STEPS continued…

2. Assess for **ovulatory dysfunction**. How?

- Menstrual cycles outside of range of 25-35 days without moliminal symptoms.
  - Up to 1/3 of women with normal menses are anovulatory
- Confirm ovulation with:
  - Midluteal progesterone level > 3
  - Or: positive LH tests, biphasic body temperature or cervical mucus changes

What are the causes of ovulatory dysfunction?

- PCOS rule out with Rotterdam criteria
- Obesity
- Hypothalamic dysfunction TFTs
- Hyperprolactinemia prolactin level

NEXT STEPS continued…

3. Assess for **tubal factor**. How?
    - HSG

What are the causes of tubal factor infertility?

- PID
- Prior ectopic pregnancy
- Prior tubal surgery

NEXT STEPS continued…

4. Assess for **uterine factor**. How?
    - TVUS and SIS
    - Rarely MRI for surgical planning in setting of fibroids or Mullerian abnormalities
    - Hysteroscopy

What are the causes of uterine factor infertility?

- Endometrial polyps
- Synechiae
- Mullerian anomalies
- Cavity distorting myomas

Table 2. The World Health Organization's Accepted Reference Values for Semen Analysis, 2010

Parameter (Units)	Reference Value (Lower Limits, 5th Centile)
Semen volume (mL)	1.5
pH	≥7.2
Sperm concentration (10^6 per mL)	15
Total sperm number (10^6 per ejaculate)	39
Total motility (%)	40
Progressive motility (PR, %)	32
Sperm agglutination	Absent*
Sperm morphology (normal forms, %)	World Health Organization criteria: lower reference limit for normal forms is 4% Tygerberg strict criteria: excellent prognosis (>14% morphologically normal spermatozoa), good prognosis (4–14%) and poor prognosis (<4%)†

*Diagnostic evaluation of the infertile male: a committee opinion. Practice Committee of the American Society for Reproductive Medicine. Fertil Steril 2015;103:e18–25.

†Kruger TF, Acosta AA, Simmons KF, Swanson RJ, Matta JF, Oehninger S. Predictive value of abnormal sperm morphology in in vitro fertilization. Fertil Steril 1988;49:112–7.

Modified from WHO laboratory manual for the examination and processing of human semen. 5th ed, Appendix 1, p. 225, 2010. Available at: http://www.who.int/reproductivehealth/publications/infertility/9789241547789/en/. Retrieved December 4, 2018.

https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/06/infertility-workup-for-the-womens-health-specialist

SOCIAL DETERMINANTS OF HEALTH

Infertility is higher among African-American women, but this population is less likely to seek fertility treatment

High costs of infertility services make them inaccessible to those with lower incomes

African-American women are more likely to have tubal or uterine factor infertility compared with Caucasians

Black women have lower live birth rate per cycle than white women.

Communities of color have higher mistrust of the medical community, leading to impactful delays in seeking care for infertility treatment.

EPIC .PHRASE

.BBonInfertilityEval

Description: Infertility evaluation counseling

The patient was counseled that evaluation should be sought for failure to conceive within 12 months of unprotected intercourse for women under 35, or 6 months for women over 35, or in the setting of known conditions which can cause infertility. Given that male factor infertility contributes in 40-50% of cases, it was recommend that the partner undergo initial work-up and semen analysis. First steps in female factor evaluation were explained to the patient including obtaining baseline laboratory assessments, performing uterine cavity evaluation, and confirming tubal patency.

CODING AND BILLING

- **ICD-10 Code**
  - **Z31.69:** Advice for other general counseling and advice on procreation
  - **N97.9:** Female infertility, unspecified
  - **N46:** Male infertility, general

EVIDENCE

- National Institute for Health and Care Excellence. Fertility problems: assessment and treatment. Clinical guideline CG 156. September 2017. Accessed October 2020. https://www.nice.org.uk/guidance/cg156/chapter/Recommendations
- ACOG Committee Opinion No 781. Infertility workup for the women's health specialist. June 2019. Accessed on October 20, 2020. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/06/infertility-workup-for-the-womens-health-specialist
- Armstrong A, Plowden TC. Ethnicicty and assisted reproductive technology. *Clin Pract.* 2012; 9(6): 651-658.