Appendix

Algorithm for Abnormal Uterine Bleeding
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Figure 1. Abnormal Uterine Bleeding Between Menarche and Menopause

Do history and physical exam.  

Rule out pregnancy.  

Use Box 1 to determine bleeding pattern.  

Severe acute bleeding  
Irregular bleeding  
Menorrhagia  
Secondary amenorrhea  

Any abnormal pattern associated with certain contraceptive methods:  
Oral contraceptive pill (OCP)  
Depo-medroxyprogesterone (DMPA)  
Intra-uterine device (IUD)

Obvious non-uterine source  
Pregnant  
Patient-specific management

Figure 2  

Figure 3  
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Figure 2. First Trimester Bleeding

Consistent with **incomplete abortion** (open cervix, no passage of POC). Ultrasound, quantitative serum HCG. Expectant management vs. suction curettage vs. misoprostol (e.g., Zhang et al) depending on amount of bleeding, signs of infection and patient preference. Rhogam if RH negative; MICRhogam if<12 wks).

Consistent with **incomplete abortion** (passage of POC). Suction curettage vs. misoprostol (e.g., Zhang et al), if doubt completed abortion. Or ultrasound to document completed abortion. Decisions based on amount of bleeding, signs of infection and patient preference. Rhogam if RH negative; MICRhogam if<12 wks).

- **Hypotensive, hypovolemic?**
  - Yes: IV fluids, type and crossmatch 2 to 4 units of packed red cells
  - No: Pelvic exam

- **Pelvic exam**
  - Consistent with **inevitable abortion** (open cervix, no passage of POC). Ultrasound, quantitative serum HCG. Expectant management vs. suction curettage vs. misoprostol (e.g., Zhang et al) depending on amount of bleeding, signs of infection and patient preference. Rhogam if RH negative; MICRhogam if<12 wks).
  - Not consistent with incomplete or inevitable abortion: Ultrasound
    - **Intrauterine pregnancy?**
      - No cardiac activity. HCG does not increase by at least 66% in 48 hours (missed abortion). Suction curettage vs. expectant management vs. oral or vaginal misoprostol (e.g., Zhang et al). Rhogam if RH negative; MICRhogam if<12 wks).
      - **Bleeding resolves and serum HCG increases by at least 66% in 48 hours?**
        - Follow closely as outpatient
    - Ectopic pregnancy?
      - Refer for surgery or methotrexate
    - Molar pregnancy?
      - Refer for suction curettage and further management.
Three main causes:
* adolescent with coagulopathy (usually vonWillebrands disease)
* adult with submucous fibroids
* adult taking anticoagulants

Hospital admission indicated? (orthostatic hypotension, hemoglobin < 10 gm/dL, profuse active bleeding, social factors)

No

1. Premarin 2.5 mg PO qid plus Phenergan 25 mg PO or IM or PR.
2. D&C if no response after 1-2 doses.
3. After acute bleeding stopped, switch to OCP (Box 2) (eg, LoOval 1 active pill qid x 4d, TID x 3d, BID x 2 days, qd x 3 weeks, then off 1 wk, then cycle on OCP for at least 3 months).
4. If OCP contraindicated, cycle Provera (Box 3) for at least 3 months.
5. Oral iron depending on hematocrit.

Yes

1. Premarin 25 mg IV q4h x 24h + Phenergan 25 mg PO or IM or PR.
2. D&C if no response after 2 doses of Premarin.
3. Transfuse 2 units packed RBC if hemoglobin < 7.5 gm/dL
4. Simultaneous with IV Premarin, start OCP (Box 2) (e.g., LoOval 1 active pill qid x 4d, TID x 3d, BID x 2 days, qd x 3 weeks, then off 1 wk cycle on OCP for at least 3 months).
5. If OCP contraindicated, cycle Provera (Box 3) for at least 3 months.
6. Oral iron.

TVUS, TSH, CBC, platelet count, prothrombin time, activated partial thromboplastin time (aPTT), platelet function analysis

Further diagnostic evaluation or referral to hematologist depending on clinical findings
Figure 4. Irregular Bleeding in the Nonpregnant Patient

- Obtain TSH. If oligomenorrhea or hypomenorrhea, obtain Prolactin
  - Abnormal → Further evaluation
  - Normal
    - Normal variant for which observation is indicated (See Box 4)?
      - Yes → Menstrual calendar, return in 3 months
      - No
        - Over age 35 OR high risk for endometrial carcinoma?
          - Yes → Endometrial biopsy, consider TVUS (Figure 10)
          - No
            - Clinical features consistent with PCOS (e.g., obesity, hirsutism)?
              - Yes → PCOS evaluation (Figure 11)
              - No
                - Consider systemic cause (See Box 5)
                  - No
                    - Patient wants to achieve pregnancy?
                      - Yes → Treat for infertility (e.g., Speroff L, et al.)
                      - No
                        - Contraindication to OCP (See Box 6a)?
                          - Yes → Progesterone (e.g., medroxyprogesterone {Provera} 10 mg daily for 14 days, off 14 days, then repeat) for at least 3 months (See Box 3).
                          - No
                            - OCP (e.g., Necon 1/35) for at least 3 months (See Box 2)
                              - Abnormal bleeding persists or intolerant to hormonal therapy?
                                - Yes
                                  - Consider higher dose OCP (e.g., Demulen 1/50) for several months or contraceptive patch or vaginal ring or higher dose progesterone. Obtain coagulation studies if there are other signs of coagulopathy. Consider TVUS to rule out uterine myoma or polyp. Consider endometrial biopsy to rule out atypia or carcinoma (Figure 10). If medical therapy fails, consider endometrial ablation, hysteroscopic resection, or hysterectomy.
                                - No → Continue or stop hormonal therapy according to patient wishes.

- No
Figure 5. Menorrhagia in the Nonpregnant Patient

Obtain: (1) TSH; (2) Hemoglobin if anemia likely; (3) Platelet function analysis in most patients (e.g., PFA-100®), especially for severe menorrhagia, or other signs of coagulopathy, or heavy bleeding at menarche, or planned surgical intervention including endometrial biopsy. 4. TVUS if anatomic cause suspected (e.g., enlarged uterus on pelvic exam).

Contraindication to OCP (See Box 6a)?

- Yes
  - Progesterone (e.g., medroxyprogesterone {Provera} 10 mg daily starting day 14 of cycle, take for 14 days, off 14 days, then repeat) for at least 3 months (See Box 3). Other options include NSAIDS or no treatment.
  - Consider hysteroscopic resection, uterine artery embolization, endometrial ablation, hysterectomy, or observation

- No
  - Cycle on OCP (e.g., Necon 1/35) starting Sunday after LMP for at least 3 months (See Box 2). Other options include NSAIDS or no treatment.
  - Response inadequate
    - TVUS
      - Normal or abnormalities not amenable to conservative procedure
        - Childbearing complete?
          - Yes
            - Consider endometrial ablation or hysterectomy
          - No
            - Menstrual calendar. Monitor hemoglobin.
        - No
          - Polyps or submucous myomas?
            - Endometrial hyperplasia (>10mm double thickness)
              - Endometrial sample (Figure 10)
            - Adenomyosis
              - Consider progesterone therapy or levonorgestrel IUD (See Box 3)
Urine pregnancy test

Positive → Further care as indicated

Negative

Prostate high → TSH, Prolactin

TSH abnormal → Obtain free T4 and proceed with further evaluation and treatment (e.g., Speroff L, et al)

Both normal

Provera 10 mg qd x 5-7 days. Withdrawal bleeding occurs? (consistent with anovulation)

Yes

Refer or consult other sources (e.g., Speroff L, et al)

No

Hypothalamic amenorrhea (e.g., exercise, weight loss) with low estrogen state?

Yes

Consider increased calorie intake, OCP to replace estrogen, bone density measurement, calcium 1000 mg daily, Vitamin D 400 IU daily (e.g., Warren MP)

No

No

Lack of withdrawal bleeding indicates an end-organ problem (e.g., Asherman’s syndrome) or lack of endogenous estrogen. Further evaluation is beyond the scope of this algorithm (see Speroff L, et al)

Wants to achieve pregnancy

Yes

Provera 10 mg qd x 5-7 days every 3 months or other progesterone regimen (See Box 3) or OCP if not contraindicated (See Box 6a). Consider PCOS evaluation depending on physical findings (Figure 11).

No
Test for Chlamydia (commonly associated with breakthrough bleeding) and gonorrhea. Ask about missed or late pills (consider contraceptive patch (Ortho-Evra) or vaginal ring (NuvaRing) to improve compliance). Consider changing to higher estrogen-dose oral contraceptive (eg, Necon 1/35, Demulen 1/35, Demulen 1/50, LoOvral). If over age 35, obtain endometrial biopsy (Figure 10).

**Figure 7. Oral Contraceptive Pill Associated Bleeding**

- **Menorrhagia (regular but heavy periods)**
  - Menorrhagia algorithm (Figure 5)
  - First 3 months of OCP use?
    - Encourage continued use, keep menstrual calendar
  - Patient not willing to continue or abnormal bleeding persists beyond 3 months
    - Test for Chlamydia and gonorrhea. Ask about missed or late pills (consider contraceptive patch or vaginal ring to improve compliance). Consider changing to higher estrogen-dose oral contraceptive (eg, Necon 1/35, Demulen 1/35, Demulen 1/50, LoOvral). If over age 35, obtain endometrial biopsy (Figure 10).

- **Breakthrough bleeding**
  - After first 3 months of OCP use
    - Change to higher dose oral contraceptive (eg, Necon 1/35, Demulen, LoOvral). Or consider the contraceptive patch (Ortho Evra) or vaginal ring (NuvaRing) to aid compliance. Or allow continued use of same pill since endometrial hyperplasia should not develop while on oral contraceptives.

- **Amenorrhea**
  - Rule out pregnancy

**Persistent abnormal bleeding?**

Consider TVUS with saline infused sonogram or hysteroscopy to rule out structural cause.
First 4-6 months of use?
- Encourage continued use or offer oral contraceptive if not contraindicated.
- Or temporarily increase frequency of injections (e.g., to every 2 months).

Premarin 1.25 mg qd x 7d. Can repeat if abnormal bleeding recurs. Consider alternate contraceptive method according to patient wishes.

Over age 35 or high risk for endometrial carcinoma?
- Over age 35 or high risk for endometrial carcinoma?
  - Yes → Consider endometrial biopsy (Figure 10)
  - No → First 4-6 months of use?
    - Yes → Encourage continued use or offer oral contraceptive if not contraindicated. Or temporarily increase frequency of injections (e.g., to every 2 months)
    - No → Continued abnormal bleeding after 6 months

Persistent bothersome abnormal bleeding
- Discuss alternate birth control methods.
First 4-6 months of use?

Yes

Uterus tender?

Yes

Doxycycline 100 mg BID x 7 days. Consider removal.

No

No

Encourage continued use if mild symptoms. Can add NSAID (e.g., ibuprofen 400 mg TID x 4 days starting day 1 of menses).

Consider OCP for one cycle or Provera for 7 days.

Persistent unacceptable abnormal bleeding?

Yes

Remove IUD. If abnormal bleeding persists and patient over age 35 do endometrial biopsy (Figure 10).
Figure 10. Endometrial Biopsy (Pipelle Aspiration)

Note: “High risk” for endometrial carcinoma refers to prolonged unopposed estrogen (e.g., patient with PCOS who has gone 2 or more years with few or no periods).

Note: TVUS may be indicated before, after, or instead of endometrial biopsy (See Box 8).

- Polyp
  - Hysteroscopic removal or D&C or observation

- Pathology report
  - Proliferative endometrium
    - Consistent with ovulatory or anovulatory bleeding.
  - Secretory endometrium
    - Consistent with ovulatory dysfunctional uterine bleeding.
  - Endometritis
    - Cervical cultures. Doxycycline 100 mg BID x 10 d.
  - Disordered endometrium or stromal collapse
    - Consistent with anovulatory bleeding.
  - Hyperplasia without atypia
  - Hyperplasia with atypia or hyperplasia with atypia or carcinoma
    - Cyclic or continuous progesterone (See Box 3). Repeat biopsy after 3-6 months. Refer if hyperplasia persists.
  - Atypia or hyperplasia with atypia or carcinoma
    - Recommend hysterectomy unless poor risk or desires future fertility and does not have carcinoma.

Further management depends on patient preferences and effect of bleeding on quality of life. Options include transvaginal ultrasound to identify polyps or submucous fibroids vs. observation vs. hormonal therapy vs. surgery (Figures 4 and 5).
**Definition of PCOS:** At least 2 of the following.
1. oligoovulation or anovulation (usually manifested by oligomenorrhea or amenorrhea)
2. elevated serum androgens or clinical signs of excess androgen
3. polycystic ovaries on ultrasound

**Clinical signs of excess androgen**
- hirsutism (facial, chest, male escutcheon)
- male pattern baldness
- acne
- late signs: deepening of voice, clitoromegaly

**Possible Polycystic Ovary Syndrome**

- **No signs of androgen excess**
  - Obtain
    - 1. blood glucose
    - 2. lipid panel
  - Treatment based on findings (See Box 7)

- **Chronic signs of androgen excess (lifelong)**
  - Obtain
    - 1. blood glucose
    - 2. lipid panel
    - 3. serum testosterone
    - 4. dehydroepiandrosterone sulfate (DHEA-S)
    - 5. early morning 17-hydroxyprogesterone
    - 6. serum prolactin
  - Treatment based on findings (See Box 7)

- **Recent signs of androgen excess**
  - Obtain
    - 1. blood glucose
    - 2. lipid panel
  - Tumor-level elevations of androgens (testosterone >200 ng/dL or DHEA-S > 800 mcg/dL)?
    - Yes
      - CT scan of adrenals and ultrasound of ovaries or MRI of adrenals and ovaries looking for androgen producing tumor.
    - No
      - Evaluation and treatment based on findings (See Box 7)
Box 1. Bleeding Pattern Definitions and Criteria

Definition of normal: The normal interval (first day of one period to first day of the next) is 21 to 35 days. The normal duration of bleeding is 1 to 7 days. The amount should be less than 1 pad or tampon per hour.

Severe acute bleeding: The patient presents acutely with bleeding that requires more than one pad/tampon per hour or with vital signs indicating hypovolemia (eg, tachycardia, hypotension, orthostatic hypotension).

Irregular bleeding: Includes oligomenorrhea, prolonged bleeding, intermenstrual bleeding, and other irregular patterns. One common presentation is prolonged bleeding, which follows prolonged absence of menses. Distinguish from secondary amenorrhea (regular menses followed by absent menses).

Menorrhagia: The subjective complaint of heavy but regular bleeding, plus >7 days of bleeding or clots or iron deficiency anemia. Bleeding >12 days should be considered irregular regardless of cyclic pattern.

Secondary amenorrhea: Strictly defined as the absence of periods for a length of time equivalent to at least 3 previous cycle intervals or absence of bleeding for 6 months regardless of previous interval. However, earlier evaluation of absent menses is often appropriate and need not be delayed to satisfy the definition.
Box 2. Combination Oral Contraceptive Pill

For women who have difficulty remembering to take the pill or difficulty taking it at the same time every day, consider the contraceptive patch (Ortho Evra) or the vaginal ring (NuvaRing). If the goal is to achieve amenorrhea, the OCP can be given continuously, but is usually withdrawn every 3 to 4 months to allow endometrial shedding and avoid irregular bleeding.

Irregular bleeding

In most women, suspect a thin endometrium and cycle on OCP (e.g., Necon 1/35, or contraceptive patch {Ortho Evra} or vaginal ring {NuvaRing}) for at least 3 months. If PCOS suspected (i.e., thick endometrium), consider starting with one or more cycles of progesterone (Box 3), and then continue cyclic progesterone or switch to OCP depending on the patient’s wishes and the need for contraception.

If there is heavy bleeding at the time of the visit, start a moderate estrogen OCP (e.g., LoOvral) one active pill qid x 4d, then one TID x 3d, then one BID x 2 days, then skip one week, then cycle on OCP for at least 3 months.

Menorrhagia

Can start OCP any time but typically on Sunday following first day of menses.
Box 3. Progesterone Therapy

In most cases, use cyclic progesterone, usually medroxyprogesterone (Provera) because of its low cost. If side effects (similar to PMS) are unacceptable, consider micronized progesterone (Prometrium), norethindrone (Aygestin), or megestrol (Megace).

Cyclic progesterone:

Start medroxyprogesterone 10 mg daily for 14 days, then off 14 days, then on 14 days, and so on without regard to bleeding pattern. This regimen has the advantage of simplicity. If bleeding occurs before completing the 14-day course, the patient can double the dose (20 mg) and “reset the clock” (count the first day of bleeding as day #1 and start medroxyprogesterone on day 14) or not reset the clock and continue the schedule without regard to bleeding pattern.

Other options include medroxyprogesterone 10 days per month (e.g., calendar day 1 to 10 or calendar day 16 to 25) regardless of bleeding pattern. Or the “clock can be reset” each month, by counting the first day of bleeding as day 1 and starting medroxyprogesterone on day 14, regardless of calendar date.

If the patient is bleeding at the time of the visit, start medroxyprogesterone now and increase every 2 days as needed to stop the bleeding (20 mg, 30 mg, 40 mg, 60 mg, 80 mg) until bleeding stops or intolerable “premenstrual” side effects develop (e.g., bloating, irritability). Continue for 14 days and then cycle 14 days on, 14 days off, and so on.

Continuous progesterone:

Continuous progesterone may be indicated if the goal is to achieve amenorrhea (e.g., busy professional or athlete, intractable menstrual migraine, catamenial seizures, severe mental retardation). Maintaining amenorrhea is often more difficult than cycling progesterone (ie, there may be unpredictable spotting). Options include

- Oral progesterone: medroxyprogesterone Provera 10-20 mg daily. Or “Minipill” (e.g., norethindrone 0.35 mg daily).

- Depo-medroxyprogesterone (Depo-Provera) 150 mg IM every 13 weeks. Often used in teenagers to improve compliance. Less often used over age 40 due to concerns about osteoporosis.

- Levonorgestrel IUD (Mirena): Effective for 5 years. (Contraindications in Box 6b.)
Box 4. Normal Variations

Irregular bleeding within 2 years of menarche (due to immaturity of the hypothalamic-pituitary-ovarian axis). Although anovulatory cycles are expected after menarche, many adolescents will request more than reassurance and may benefit from hormonal therapy (Figure 4).

Irregular perimenopausal bleeding. Missed periods or prolonged intervals are expected in perimenopause. Initially, cycle lengths may also decrease, but intervals less than 21 days or other irregular patterns require endometrial biopsy.

Premenstrual spotting. A few days of premenstrual spotting, if it is contiguous with the period, can be a normal variant. The total duration should be less than 8 days.

Postmenstrual spotting. A few days of postmenstrual spotting, if it is contiguous with the period, can be a normal variant. The total duration should be less than 8 days. Postmenstrual spotting can be a sign of endometritis which could be treated with doxycycline 100 mg BID x 7d.

Brief midcycle spotting. Midcycle spotting can occur at the time of ovulation due to the normal dip in serum estrogen levels. However, this is not common and should prompt an endometrial biopsy in women over age 35.

Single early period (<21 days) or occasional missed period. A single early period may not require an endometrial sample even in a woman over age 35 if subsequent periods are regular and no other abnormal bleeding occurs. However, there should be no procrastination if subsequent cycles are abnormal. Also, it would not be wrong to sample even after one early period in a woman over 35 if she is concerned. Early periods and occasional missed periods are common in younger women and may result from mental stress or illness.
<table>
<thead>
<tr>
<th>Box 5. Evaluation for Systemic Cause of Abnormal Uterine Bleeding</th>
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<tr>
<td><strong>Step 1.</strong> If uterus tender, obtain gonorrhea and chlamydia cultures and start doxycycline 100 mg twice daily for 7 days.</td>
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<tr>
<td><strong>Step 2.</strong> Determine whether the patient is taking a medication that could cause abnormal uterine bleeding. Examples include phenytoin, antipsychotics [e.g., olanzapine, risperidone], tricyclic antidepressants [e.g., amitriptyline, nortriptyline], and corticosteroids [e.g., prednisone, dexamethasone]. Although these medications can cause abnormal bleeding, further evaluation and treatment are usually completed despite medication use.</td>
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<td><strong>Step 3.</strong> Determine the presence of advanced systemic disease based on history and physical exam (e.g., liver failure, kidney failure). Abnormal uterine bleeding is a late finding in these diseases. Therefore, with the exception of thyroid disease, laboratory screening in the absence of obvious clinical manifestations is not necessary. Patients with advanced systemic disease may benefit from further management as described in Figure 4.</td>
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Box 6a. Contraindications to Oral Contraceptives

- Previous thromboembolic event or stroke
- History of estrogen dependent tumor
- Active liver disease
- Pregnancy
- Hypertriglyceridemia
- Over age 35 and smokes >15 cigarettes per day
- Over age 40 is not a contraindication but many physicians favor progesterone therapy in this age group (Box 3).
- Migraine with aura

Box 6b. Contraindications to the IUD

- Pregnancy
- Pelvic inflammatory disease
- Uterine distortion
- Immunocompromise
- History of ectopic pregnancy
- Not mutually monogamous

Box 6c. Contraindications to Nonsteroidal Antiinflammatory Drugs

- Aspirin sensitivity
- Pregnancy
- Caution in renal/hepatic failure, peptic disease

Box 6d. Contraindications Progesterone

- Active liver disease
- Thrombophlebitis
- Pregnancy
### Box 7. Treatment of Polycystic Ovary Syndrome

1. **Prevention of endometrial hyperplasia.** If the patient has amenorrhea, withdraw medroxyprogesterone (Provera 10 mg daily for 7 days), then cycle on OCP (See Box 2) unless contraindicated. If the patient is bleeding at the time of the visit, start cyclic medroxyprogesterone (See Box 3) followed by the OCP after 2-3 months. If the OCP is contraindicated, continue cyclic medroxyprogesterone. The progestin in the oral contraceptive should have low androgenic activity (e.g., Yasmin, Demulen, Ortho Tri-Cyclen). (e.g., Barbieri and Ehrmann, Rosenfield) If the patient has had amenorrhea for over a year, consider endometrial biopsy or TVUS followed by biopsy for endometrial hyperplasia (stripe > 10mm).

2. **Hirsutism.** Primary treatment is the OCP (e.g., Yasmin). Other options, which include shaving, chemical depilatories, spironolactone, and hydrolysis, are discussed elsewhere (e.g., Baribieri and Ehrmann).

3. **Infertility.** Options, which include weight loss, metformin, clomiphene citrate, and gonadotropin releasing hormone, are discussed elsewhere (e.g., Speroff).

4. **Abnormal uterine bleeding.** In general the treatment of abnormal uterine bleeding is the same for women without PCOS (See Figures 4-6). However, most women with PCOS have a thick endometrial lining and should receive a 10-14 day course of progesterone (e.g., Provera), followed by withdrawal bleeding, before starting the oral contraceptive pill.


6. **Elevated blood sugar.** Determine the presence of diabetes or glucose intolerance using established criteria (http://care.diabetesjournals.org/cgi/content/full/28/suppl_1/s37/T2). Obtain oral glucose tolerance test in women with normal fasting glucose but other risk factors for diabetes (obesity, family history, ethnicity). Consider metformin for initial treatment.

7. **Overweight.** Diet and exercise counseling.

8. **Elevated 17-hydroxyprogesterone.** Evaluate for nonclassic congenital adrenal hyperplasia. (e.g., Ehrmann)

9. **Elevated prolactin.** Evaluate further depending on degree of elevation. (e.g., Schlechte)
TVUS may be indicated before, after, or instead of endometrial biopsy. The two tests are not mutually exclusive and provide different information. TVUS can detect endometrial polyps, uterine myomas, and endometrial hyperplasia. Endometrial biopsy can detect hyperplasia, atypia, and carcinoma. The conservative approach is to do the endometrial biopsy whether or not a TVUS is obtained. However, other factors may enter the decision:

1. TVUS may be indicated if the patient will likely require operative management (e.g., office biopsy would be a technical challenge or fibroids suspected on physical exam or probable need for eventual hysteroscopy or endometrial ablation).

2. Practical considerations. High-quality TVUS is not available in many locations. TVUS is costly and insurance status may influence the order of testing.

3. One option is to first rule out neoplasia with the endometrial biopsy, then start hormonal therapy, and obtain a TVUS only if abnormal bleeding persists despite hormonal therapy.

4. The TVUS is less invasive and less painful than endometrial biopsy. One study reports experience with initial TVUS and no further evaluation if the double-thickness endometrial stripe is < 5 mm (Goldstein, et al.).
Box 9. Abbreviations

DHEA-S – dehydroepiandrosterone sulfate
DMPA – depo-medroxyprogesterone (Depo-Provera)
HCG – human chorionic gonadotropin
IUD – intrauterine device
LMP – last menstrual period
OCP – oral contraceptive pill
PCOS – polycystic ovary syndrome
PMS – Premenstrual syndrome
POC – products of conception
TSH – thyroid stimulating hormone
TVUS – transvaginal ultrasound
Box 10. References


