Management of Abnormal Bleeding in Primary Care

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Disclosure

I have no financial relationships or conflicts of interest related to the content of this presentation

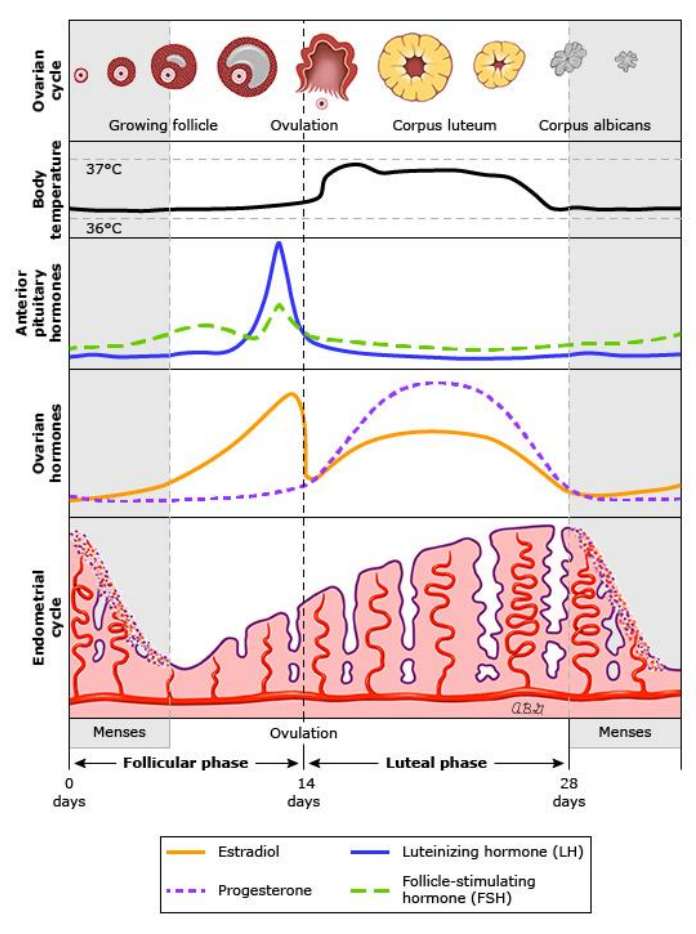
Any off-label use will be highlighted

Objectives

- Review the physiology and pathophysiology of abnormal uterine bleeding (AUB)
- Review options for management of AUB
- Case based review and best options for management

Outline

- Normal Bleeding
- Pathophysiology
- Evaluation
- Medical Management
- Surgical Management
- Case Based Review
  - Leiomyoma (Fibroids)
  - Ovulatory Dysfunction
  - Breakthrough Bleeding
  - Acute Bleeding
  - Postmenopausal Bleeding



What bleeding is normal?

Menstrual cycle lasting 21-35 days and bleeding lasting <7 days

Abnormal: heavy, intermenstrual, irregular, frequent, etc

Abnormal Uterine Bleeding (AUB) Classification

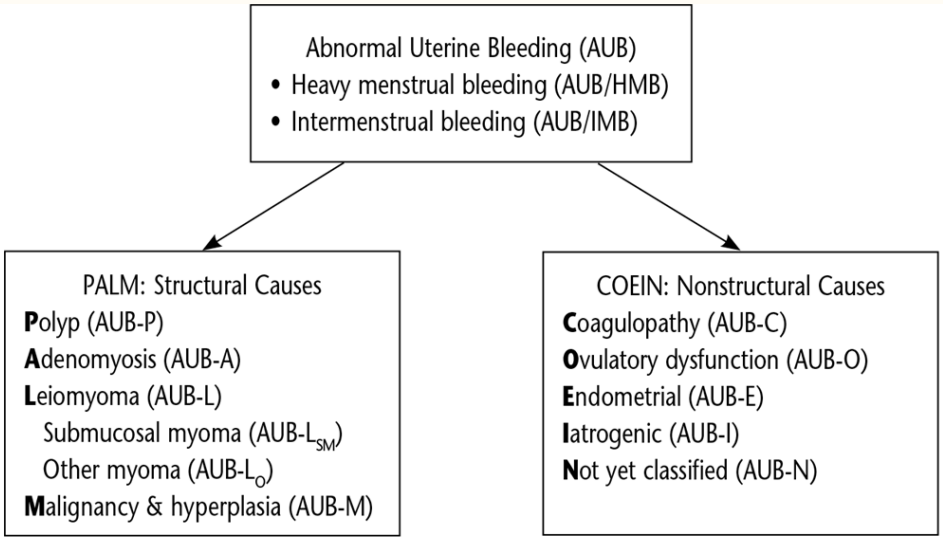


Fig. 1. Basic PALM–COEIN classification system for the causes of abnormal uterine bleeding in nonpregnant women of reproductive age. This system, approved by the International Federation of Gynecology and Obstetrics, uses the term AUB paired with descriptive terms that describe associated bleeding patterns (HMB or IMB), or a qualifying letter (or letters), or both to indicate its etiology (or etiologies). Modified from Munro MG, Critchley HO, Broder MS, Fraser IS. FIGO classification system (PALM–COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. FIGO Working Group on Menstrual Disorders. Int J Gynaecol Obstet 2011;113:3–13. [PubMed] [Full Text] ⇦

Most Frequent Differential Diagnoses by Age

13-18 Years

1. Anovulatory bleeding due to immaturity or dysregulation of the HPO axis
2. Hormonal contraceptive use
3. Pregnancy
4. Pelvic infection (STI)
5. Coagulopathies

19-39 Years

1. Pregnancy
2. Structural lesions
3. Anovulatory cycles
4. Use of hormonal contraception
5. Pelvic Infection (STI)
6. Endometrial hyperplasia

*Endometrial cancer is less common but may occur in this age group.

40 Years to Menopause

1. Anovulatory bleeding due to declining ovarian function
2. Endometrial hyperplasia
3. Endometrial carcinoma
4. Endometrial atrophy
5. Leiomyoma

Evaluation

- History
  - Bleeding patterns, associated symptoms, pain, family history
  - Medications
- Physical exam
- Laboratory Testing
  - Hcg
  - CBC, TSH, cervical cancer screening
  - +/- CT/GC if high risk, coagulation panel
- Imaging
- Endometrial sampling

Meds: warfarin, heparin, NSAIDs, hormones/ contraceptives, ginkgo, ginseng, and motherwort

Exam: weight, PCOS, thyroid disease, insulin resistance, bleeding disorders

Screen for hemostasis disorders if

- Heavy bleeding since menarche
- Postpartum hemorrhage, bleeding with surgery or dental work
- 2+: frequent bruising, epistaxis, gum bleeding, family history of bleeding symptoms

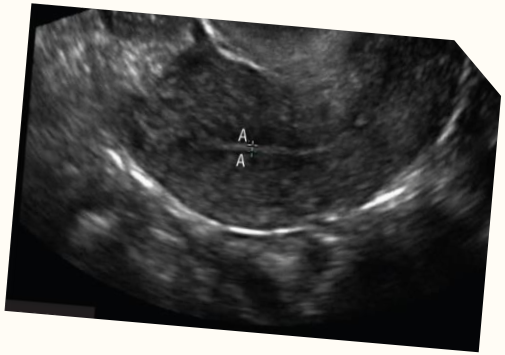
Sampling: >45yo OR history of unopposed estrogen exposure (obesity, PCOS), failed medical management, persistent AUB

When is imaging indicated?

Abnormal exam or persistent symptoms despite treatment

Transvaginal ultrasonography (TVUS)

Great screening for fibroids and polyps, but sensitivity and specificity for intracavitary pathology are only 56% and 73%

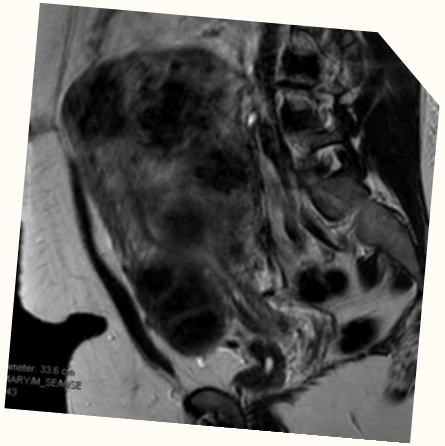


Office Hysteroscopy

Better than TVUS in the detection of intracavitary lesions. Provides better information on size and location of lesions.

MRI

Routine use not recommended, may be useful for treatment of complex myomas and uterine anomalies. Consider $$ vs. benefits.



Management of AUB

Medical

- NSAIDs
- Combined hormonal contraception
- Levonorgestrel IUD
- Progestins (oral/IM)
- Tranexamic acid
- GnRH analogs

Surgical

- Resection
- Myomectomy, RFA
- Endometrial ablation
- Uterine artery embolization
- Hysterectomy

NSAIDS

Decreased prostaglandin synthesis in endometrium

10-52% reduction

Ibuprofen 600mg 2-4x/day

Naproxen 500mg x2, then 250-500 BID

Mefenamic acid 500mg 3x/day

or 500mg x1 then 250mg q6h

Combined hormonal contraception (CHC)

COC, patch, ring

35-69% reduction in bleeding

Pregnancy rate 7% (0.3% perfect use)

20-35mcg estradiol + progestin

Cyclic 21/7 or 24/4

Extended cycle, Continuous

Pros

Cycle timing, dysmenorrhea, androgen suppression, increased FVIII/vWF, decreased ovarian/endometrial cancer, bone health, perimenopause symptoms

Cons

Bloating, headache, nausea, BTB, mood, sexual function, VTE, CV risk
Contraindications

Levonorgestrel IUD

71-95% reduction in menstrual bleeding

0.5% pregnancy rate at 7 years

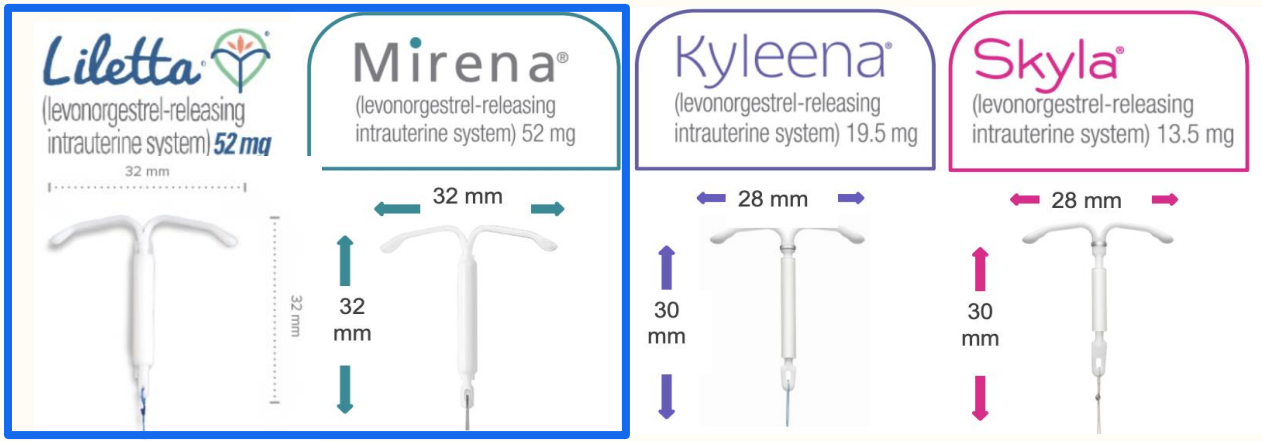
Pros: demonstrated efficacy, all age groups, multiple weight groups, QOL, low dose, dysmenorrhea

Cons: placement, expulsion, spotting

Mirena/Liletta 52mg, 5-8 years

*Kyleena 19.5mg, 5 years

*Skyla 13.5mg, 3 years



Oral progestins

87% reduction in bleeding

Less well studied

No standard regimen, consider tapering when bleeding controlled

Cons: dysphoria, bloating, increased appetite

Medroxyprogesterone acetate (Provera)

3-30mg daily

Norethindrone acetate (Aygestin)

2.5-15mg daily

*Megestrol acetate (Megace)

*Norethindrone (Micronor, Camila) 0.35mg daily

*Drospirinone (Slynd) 4mg daily

IM progestin

49% reduction in bleeding at 2mo

Cons: weight gain, thrombosis

*Depot medroxyprogesterone acetate (Depo Provera)

Tranexamic acid (TXA)

Antifibrinolytic approved for treatment of heavy menses

26-54% reduction in bleeding

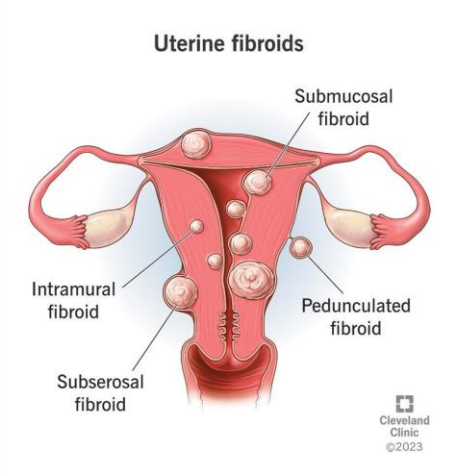
Cons: frequency, nausea, headache, VTE

TXA (Lysteda) 1.3g 3x/day for up to 5day/mo

GnRH Analogs

For heavy bleeding with fibroids, endometriosis

69-80% reduction in bleeding



Elagolix-estradiol-norethindrone (Oriahnn)

PO BID, up to 24mo

Relugolix-estradiol-norethindrone (Myfembree)

PO Daily, up to 24mo

Leuprolide Depot (Lupron)

3.25mg IM monthly

11.25mg IM q3mo

Pros: potential for reduction if fibroid volume, pain

Cons: hot flushes, night sweats, headache, nausea, potential changes in BMD, insurance

Surgery

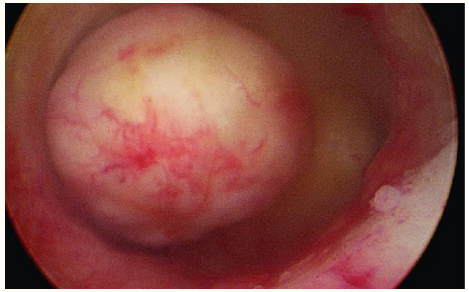
Resection (polyps, submucosal fibroids)

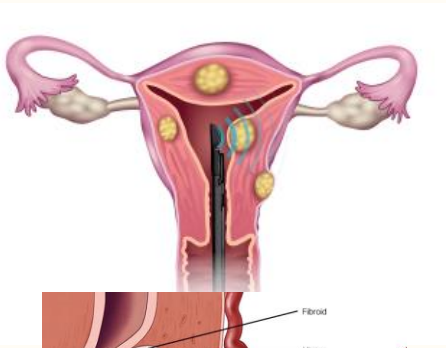
Myomectomy, Radiofrequency ablation (RFA)

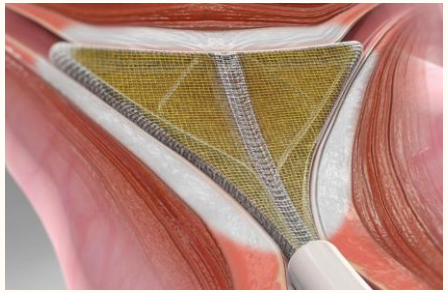
Endometrial ablation

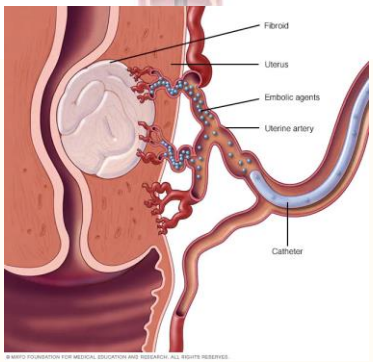
Uterine artery embolization (UAE)

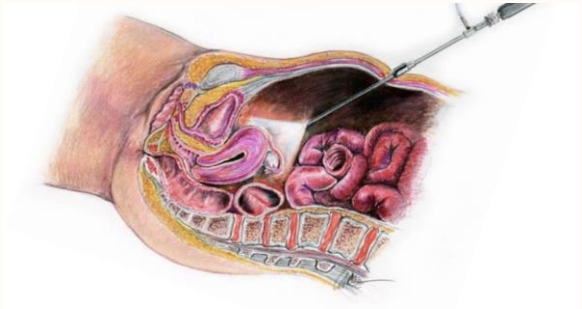
Hysterectomy











Management of AUB

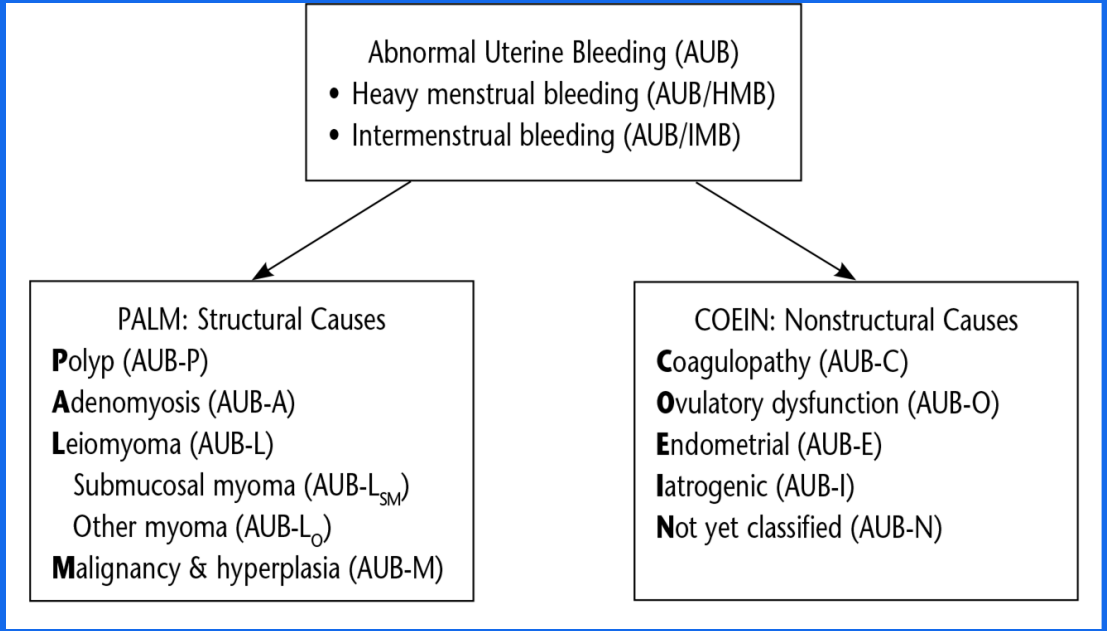
Medical

- NSAIDs
- Combined hormonal contraception
- Levonorgestrel IUD
- Progestins (oral/IM)
- Tranexamic acid
- GnRH analogs

Surgical

- Resection
- Myomectomy, RFA
- Endometrial ablation
- Uterine artery embolization
- Hysterectomy

Etiology Based Treatment



Etiology Based Treatment

Polyp
- Intermenstrual bleeding
- Diagnosis: TVUS, hysteroscopy
- Treat: Resect

Adenomyosis
- Heavy, painful regular bleeding
- Diagnosis: TVUS, MRI
- Treat: medical, hysterectomy, UAE

Leiomyoma

Malignancy and hyperplasia
- Heavy or postmenopausal bleeding
- Diagnosis: endometrial sampling
- Treat: surgery, rarely medical

Coagulopathy
- Heavy menses from menarche, underlying medical conditions
- Diagnosis: labs
- Treat: medical

Ovulatory dysfunction

Endometrial
- Cyclic heavy bleeding without structural/other cause
- Diagnosis of exclusion
- Treat: medical, endometrial ablation, hysterectomy

Iatrogenic
Breakthrough bleeding, drug interactions, anticoagulation, agents that change dopamine or serotonin metabolism/uptake

Not yet classified
Chronic endometritis: diagnosed on EMB, treat with doxycycline
Arteriovenous malformation: imaging after procedure, surgery

Leiomyoma

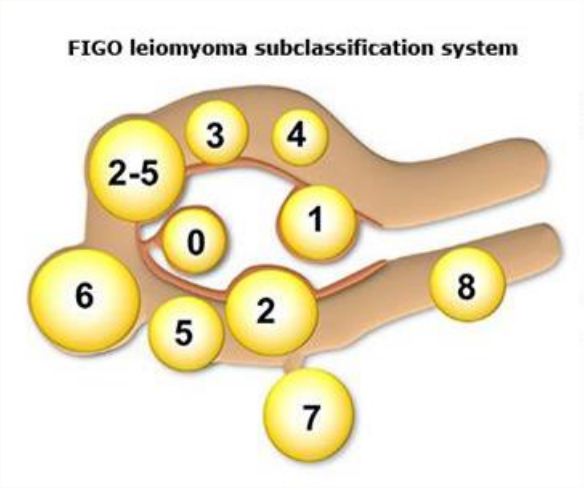
30yo G0 presents with heavy cyclic menses. She hopes to try for pregnancy in the next year. Evaluation shows mild anemia and a submucosal fibroid on ultrasound.

Variation: Large intramural fibroid?

40yo G2P2 presents with cyclic heavy menses. Evaluation shows mild anemia and several small intramural fibroids.

45yo G2P2 presents with cyclic heavy menses and pelvic pressure. Evaluation shows a large multifibroid uterus.

Leiomyoma (Fibroids)



SM – submucous	0	Pedunculated intracavitary
	1	<50% intramural
	2	≥50% intramural
	3	Contacts endometrium; 100% intramural
O – Other	4	Intramural
	5	Subserous ≥50% intramural
	6	Subserous <50% intramural
	7	Subserous pedunculated
	8	Other (specify eg, cervical, parasitic)

Benign monoclonal smooth muscle tumors

Up to 70-80% of women in their 40s

Asymptomatic, bleeding, pressure

Diagnosis: exam, TVUS, MRI

Medical

- **NSAIDs**
- **CHC**
- **Levonorgestrel IUD**
- **Progestins (oral/IM)**
- **Tranexamic acid**
- **GnRH analogs**

Surgical

- **Resection (0,1,2)**
- **Myomectomy, RFA**
- Endometrial ablation
- **UAE**
- **Hysterectomy**

Leiomyoma

Medical
- **NSAIDs**
- **CHC**
- **Levonorgestrel IUD**
- **Progestins (oral/IM)**
- **Tranexamic acid**
- **GnRH analogs**

Surgical
- **Resection (0,1,2)**
- **Myomectomy, RFA**
- Endometrial ablation
- **UAE**
- **Hysterectomy**

30yo G0 presents with heavy cyclic menses. She hopes to try for pregnancy in the next year. Evaluation shows mild anemia and a submucosal (type 1) fibroid on ultrasound.

Variation: Large intramural (type 2-5) fibroid?

40yo G2P2 presents with cyclic heavy menses and dysmenorrhea. Evaluation shows mild anemia and several small intramural fibroids.

46yo G2P2 presents with cyclic heavy menses, dysmenorrhea, and pelvic pressure. Evaluation shows a large multifibroid uterus.

Leiomyoma

Medical
- **NSAIDs**
- **CHC**
- **Levonorgestrel IUD**
- **Progestins (oral/IM)**
- **Tranexamic acid**
- **GnRH analogs**

Surgical
- **Resection (0,1,2)**
- **Myomectomy, RFA**
- Endometrial ablation
- **UAE**
- **Hysterectomy**

30yo G0 presents with heavy cyclic menses. She hopes to try for pregnancy in the next year. Evaluation shows mild anemia and a submucosal (type 1) fibroid on ultrasound.

Resection (0,1,2)

Variation: Large intramural (type 2-5) fibroid?

Myomectomy, RFA

40yo G2P2 presents with cyclic heavy menses and dysmenorrhea. Evaluation shows mild anemia and several small intramural fibroids.

NSAIDs, CHC, Levonorgestrel IUD, Progestins (oral/IM), TXA, GnRH analogs
Surgical second line

46yo G2P2 presents with cyclic heavy menses, dysmenorrhea, and pelvic pressure. Evaluation shows a large multifibroid uterus.

GnRH analogs, Myomectomy/RFA, UAE, hysterectomy

Ovulatory Dysfunction

30yo G0 presents with irregular heavy menses. She hopes to try for pregnancy in the next year. Evaluation shows obesity and acne. Pelvic ultrasound is normal.

Variation: No plans for pregnancy?

Variation: 18yo, BMI 22

49yo G2P2 presents with new irregular menses, some of which are heavy or prolonged. Pelvic US is normal

Ovulatory Dysfunction

Box 1. Causes of Anovulation

Physiologic

- Adolescence
- Perimenopause
- Lactation
- Pregnancy

Pathologic

- Hyperandrogenic anovulation (eg, polycystic ovary syndrome, congenital adrenal hyperplasia, or androgen-producing tumors)
- Hypothalamic dysfunction (eg, secondary to anorexia nervosa)
- Hyperprolactinemia
- Thyroid disease
- Primary pituitary disease
- Premature ovarian failure
- Iatrogenic (eg, secondary to radiation or chemotherapy)
- Medications

- Non cyclic, unpredictable bleeding, inconsistent volume, may lack other prodromal symptoms
- Diagnosis: history, labs +/- endometrial sampling
- Treat: medical, prevent endometrial cancer

Medical
- NSAIDs
- **CHC**
- **Levonorgestrel IUD**
- **Progestins (oral/IM)**
- Tranexamic acid
- GnRH analogs
- **Lifestyle measures**

Surgical
- Resection
- Myomectomy
- Endometrial ablation
- UAE
- **Hysterectomy**

Ovulatory Dysfunction

Medical
- NSAIDs
- **CHC**
- **Levonorgestrel IUD**
- **Progestins (oral/IM)**
- Tranexamic acid
- GnRH analogs
- **Lifestyle**

Surgical
- Resection (0,1,2)
- Myomectomy, RFA
- Endometrial ablation
- UAE
- **Hysterectomy**

30yo G0 presents with irregular heavy menses. She hopes to try for pregnancy in the next year. Evaluation shows BMI 35 and acne. Pelvic ultrasound is normal.

Variation: No plans for pregnancy?

Variation: 18yo, BMI 22

49yo G2P2 presents with new irregular menses, some of which are heavy or prolonged. BMI 35. Pelvic US is normal.

Ovulatory Dysfunction

Medical
- NSAIDs
- **CHC**
- **Levonorgestrel IUD**
- **Progestins (oral/IM)**
- Tranexamic acid
- GnRH analogs
- **Lifestyle**

Surgical
- Resection (0,1,2)
- Myomectomy, RFA
- Endometrial ablation
- UAE
- **Hysterectomy**

30yo G0 presents with irregular heavy menses. She hopes to try for pregnancy in the next year. Evaluation shows BMI 35 and acne. Pelvic ultrasound is normal.

Lifestyle measures, cyclic progestin
EMB

Variation: No plans for pregnancy?

Lifestyle measures, CHC, IUD, progestins
EMB

Variation: 18yo, BMI 22

CHC, IUD, progestins

49yo G2P2 presents with new irregular menses, some of which are heavy or prolonged. BMI 35. Pelvic US is normal.

EMB
Expectant, CHC, IUD, progestins, hysterectomy

Iatrogenic Breakthrough Bleeding

Patient with increased breakthrough bleeding on:

- CHCs
- Oral progestins
- Depot medroxyprogesterone acetate
- Progestin implant
- Levonorgestrel IUD

Iatrogenic / Breakthrough Bleeding (BTB)

Menstrual suppression

- Continuous COCs 49% (2mo), 68% (6mo), 88% (12mo)
- Continuous patch similar to COC
- Continuous vaginal ring 89% (6mo)
- Oral progestins
  - Norethindrone 0.35mg low rates
  - Norethindrone acetate 5mg 76% (2yr)
  - Drospirenone limited data
- Depot Medroxyprogesterone 68-71% (2yr)
- Etonogestrel implant 22%
- Levonorgestrel IUD 52mg 50% (1yr), 60% (2yr)
- GnRH analogs high rates

Table 2. Strategies to Manage Breakthrough Bleeding*

Method	Strategies
Estrogen-containing OCPs	• Counsel that BTB decreases with each successive cycle of therapy • With shared decision making, can consider cyclic cycles for 3–6 months, then transition to extended cycles • Hormone-free interval for 3–4 consecutive days • Supplementation with intermittent estrogen
Oral progestins	• Counsel patient to take POPs at the exact same time each day • Tapers: 0.7 mg daily for 7 days followed by a return to traditional dosing† • Increase norethindrone dose if needed for persistent breakthrough bleeding
Depot medroxyprogesterone acetate	• NSAIDs (5–7 days of treatment) • Hormonal treatment (if medically eligible) wctith combined OCPs or estrogen (10–20 days of treatment) • Administration at more frequent intervals may increase rates of amenorrhea
Implant	• NSAIDs (5–7 days of treatment) • Hormonal treatment (if medically eligible) with combined OCPs or estrogen (10–20 days of treatment); consider POPs for those with contraindications to estrogen)
Progestin-containing intrauterine device	• Those individuals using a lower-dose IUD experience more bleeding or spotting days on average than those using levonorgestrel-releasing 52-mg IUD with higher doses of levonorgestrel • Expert opinion supports a trial of NSAIDs, doxycycline, POPs, or continuous OCP use • Counsel patient on alternative methods

Abbreviations: BTB, breakthrough bleeding; IUD, intrauterine device; NSAIDS, nonsteroidal anti-inflammatory drugs; OCPs, oral contraceptive pills; POPs, progestin-only pills.

*See also the Centers for Disease and Control and Prevention's Selected Practice Recommendations for Contraceptive Use (https://www.cdc.gov/reproductivehealth/contraception/mmwr/spr/summary.html).

†For more information on tapers, see Screening and management of bleeding disorders in adolescents with heavy menstrual bleeding. ACOG Committee Opinion No. 785. American College of Obstetricians and Gynecologists. Obstet Gynecol 2019;134:e71–83.

Iatrogenic Breakthrough Bleeding

Patient with increased breakthrough bleeding on:

- CHCs
- Oral progestins
- Depot medroxyprogesterone acetate
- Progestin implant
- Levonorgestrel IUD

Iatrogenic Breakthrough Bleeding

Increased breakthrough bleeding on:

- CHCs
- Oral progestins
- Depot medroxyprogesterone acetate
- Progestin implant
- Levonorgestrel IUD

Strategies
• Counsel that BTB decreases with each successive cycle of therapy • With shared decision making, can consider cyclic cycles for 3–6 months, then transition to extended cycles • Hormone-free interval for 3–4 consecutive days • Supplementation with intermittent estrogen

Acute AUB

Acute heavy AUB, worsening hemodynamics

Patient with typical regular cycles presents with acute heavy AUB 2wks after expected menses, 12mm EMS, hemodynamically stable

Acute heavy AUB, stable hemodynamics, type 0 fibroid

Acute AUB

Sufficient quantity to require immediate intervention to prevent further blood loss

Medroxyprogesterone (Provera) 20mg PO TID x7d

Norethindrone (Aygestin) 5mg PO 1-4x/day x7d

~~Megestrol (Megace) 20-60mg PO BID x7d~~

COC 35mcg estradiol PO TID x7d

COC 35mcg estradiol PO 5,4,3,2,1x/day taper

Conjugated estrogens 25mg IV q4-6h x24h

TXA 1.3g PO TID x5d

TXA 10mg/kg IV q8h (max 600mg/dose)

Surgical intervention: D&C, resection, endometrial ablation, UAE, hysterectomy, tamponade

Acute AUB

- **Oral progestin**
- **COC**
- **IV estrogen**
- **TXA**
- **Surgical: D&C, resection, ablation, UAE, hysterectomy**

Acute heavy AUB, worsening hemodynamics

Patient with typical regular cycles presents with acute heavy AUB 2wks after expected menses, 12mm EMS, hemodynamically stable

Acute heavy AUB, stable hemodynamics, type 0 fibroid

Acute AUB

- **Oral progestin**
- **COC**
- **IV estrogen**
- **TXA**
- **Surgical: D&C, resection, ablation, UAE, hysterectomy**

Acute heavy AUB, worsening hemodynamics

1: IV estrogen, D&C
2: add TXA
3: UAE
4: Hysterectomy

Patient with typical regular cycles presents with acute heavy AUB 2wks after expected menses, 12mm EMS, hemodynamically stable

1: Oral progestin or COC
2: TXA
3: Surgical management

Acute heavy AUB, stable hemodynamics, type 0 fibroid

1: Oral progestin or COC
2: Resection

Postmenopausal bleeding

60yo G3P3 with single episode of postmenopausal bleeding.

60yo G0, history of irregular menses, BMI 40, single episode

60yo with 3 episode of PMB, prior benign polyps, BMI 35

Postmenopausal Bleeding

- Etiologies: polyps, atrophy, hyperplasia, endometrial cancer (1-14%), fibroids
- Risks for cancer: age, obesity, unopposed estrogen, DM, family history
  - 90% present with bleeding
- Evaluation with endometrial stripe (EMS) on TVUS or endometrial sampling first line
  - Persistent or recurrent bleeding needs additional work up

TVUS
- In patients **with** bleeding, EMS <4mm has >99% NPV for cancer
- In patients **without** bleeding, TVUS should **NOT** be used for screening
- Limited by axial uterus, obesity, myomas, adenomyosis, prior uterine surgery, HRT

Postmenopausal bleeding

60yo G3P3 with single episode of postmenopausal bleeding.

60yo G0, history of irregular menses, BMI 40, single episode

60yo with 3 episode of PMB, prior benign polyps, BMI 35

Postmenopausal bleeding

60yo G3P3 with single episode of postmenopausal bleeding.

- Pelvic US with 3mm EMS → **TVUS (or EMB)**
- Pelvic US with 6mm EMS → **Observe**
- Pelvic US with 3mm EMS, had second episode of bleeding → **EMB**
- Pelvic US with suspected polyp → **EMB**
- Pelvic US with 6mm EMS, EMB benign, bled again → **Hysteroscopy D&C**

60yo G0, history of irregular menses, BMI 40, single episode → **Hysteroscopy D&C**

60yo with 3 episodes of PMB, prior benign polyps, BMI 35 → **EMB**

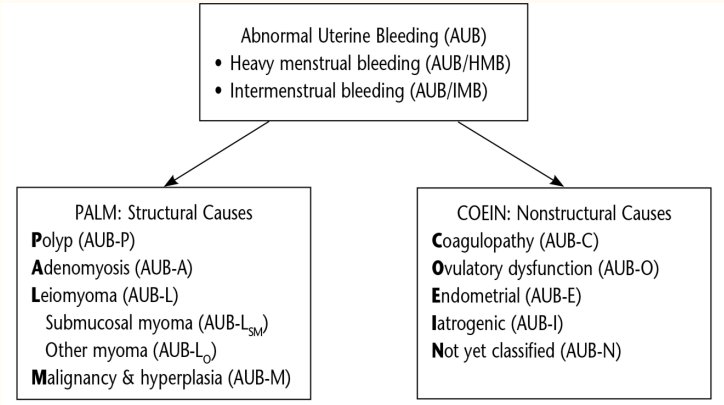
Discuss hysterectomy

Summary

Review the physiology and pathophysiology of AUB

Review options for management of AUB

Discuss specific etiologies and best options for management



Medical
- NSAIDs
- CHC
- Levonorgestrel IUD
- Progestins (oral/IM)
- Tranexamic acid
- GnRH analogs

Surgical
- Resection
- Myomectomy
- Endometrial ablation
- UAE
- Hysterectomy

Leiomyoma (Fibroids), Ovulatory Dysfunction, Breakthrough Bleeding, Acute Bleeding, Postmenopausal Bleeding

References

- Diagnosis of abnormal uterine bleeding in reproductive-aged women. Practice Bulletin No. 128. American College of Obstetricians and Gynecologists. Obstet Gynecol 2012;120:197–206.
- Management of acute abnormal uterine bleeding in nonpregnant reproductive-aged women. Committee Opinion No. 557. American College of Obstetricians and Gynecologists. Obstet Gynecol 2013;121:891–6.
- The role of transvaginal ultrasonography in evaluating the endometrium of women with postmenopausal bleeding. ACOG Committee Opinion No. 734. American College of Obstetricians and Gynecologists. Obstet Gynecol 2018;131:e124–9.
- General Approaches to Medical Management of Menstrual Suppression. Clinical Consensus No. 3. American College of Obstetricians and Gynecologists. Obstet Gynecol 2022;140:528-41.
- Management of abnormal uterine bleeding associated with ovulatory dysfunction. Practice Bulletin No. 136. American College of Obstetricians and Gynecologists. Obstet Gynecol 2013;122:176–85.
- Management of symptomatic uterine leiomyomas. ACOG Practice Bulletin No. 228. American College of Obstetricians and Gynecologists. Obstet Gynecol 2021;137:e100–15.

Questions?

We're here to help

APPs: Kelly Hill, Shannon O'Laughlin, Diane McNamara, Lisa Krikorian, Courtney Gallant, Andrea Grealish, Jill Kooyoomjian, Corinne Prigo

General (Menopause): Dawn Anderson

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AUB Knowledge Check

A 56-year-old postmenopausal women reports 2 episodes of light vaginal bleeding over the past month. Her physical examination findings are unremarkable and do not suggest a possible source of her bleeding. Pelvic ultrasonographic evaluation shows a regular-appearing endometrial stripe with a thickness of 3 mm. What is the most likely cause of her bleeding?

- Endometrial atrophy
- Endometrial cancer
- Endometrial hyperplasia
- Endometrial polyp

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In postmenopausal women with vaginal bleeding, an endometrial stripe thickness of 4 mm or less confers a 99% negative predictive value for endometrial cancer. Given no other abnormalities on ultrasonography, the most likely diagnosis for this patient is endometrial atrophy. Should further bleeding occur, additional evaluation may be indicated.

AUB Knowledge Check

A 38-year-old nulligravid woman presents with heavy regular menses despite high-dose cyclic oral contraceptive therapy. Her medical and surgical histories are normal. She does not take other medications. The results of recent serum laboratory testing were normal, including thyroid function tests. Pelvic ultrasonography shows a normal-sized uterus with a 1.2-cm endometrial echocomplex and normal-appearing ovaries. What is the best next step in management?

- Discontinue oral contraceptive and repeat laboratory testing
- Insert a levonorgestrel intrauterine device
- Prescribe tranexamic acid therapy during menses
- Perform an endometrial biopsy
- Perform a dilation and curettage

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>45yo with AUB, endometrial biopsy (EMB) is recommended. EMB is also indicated for women under 45 if other risk factors exist (obesity, PCOS, persistent abnormal uterine bleeding, or lack of improvement with medical management). Thyroid function test results are not affected by oral contraceptive use. A levonorgestrel IUD and tranexamic acid may be offered if the EMB result is normal. D&C is inappropriate without a preoperative EMB.

AUB Knowledge Check

A 22-year-old nulligravid woman presents to your clinic for heavy menstrual periods. She reports that her periods occur every 25 days, with bleeding lasting 5 days. She requires 4-5 regular tampons per day on her heaviest flow days. Which aspect of her menstrual cycles is abnormal?

- Cycle duration of 25 days
- Bleeding Duration of 5 days
- Flow requiring 4-5 tampons per day
- Her cycles are not abnormal

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- Cycle duration of 25 days
- Bleeding Duration of 5 days
- Flow requiring 4-5 tampons per day
- **Her cycles are not abnormal**

Normal menstrual cycle length is 21–35 days, with bleeding lasting approximately 5 days. Heavy menstrual bleeding is generally defined as a menstrual blood loss greater than 80 mL per menstrual period.

AUB Knowledge Check

A 42-year-old woman, gravida 3, para 3, presents to your office reporting heavy, regular monthly menses. She states that her menstrual bleeding used to last only 4 days, but now she bleeds for 8 days. Her flow is also heavier now, requiring a greater number of pads on each day of bleeding. On physical examination, you note a slightly enlarged uterus. A pelvic ultrasonogram shows multiple uterine myomas, including a 2-cm submucosal myoma. What is the most appropriate diagnostic classification of her symptoms?

- Abnormal uterine bleeding- adenomyosis (AUB-A)
- Abnormal uterine bleeding- endometrial (AUB-E)
- Abnormal uterine bleeding- leiomyoma (AUB-L)
- Abnormal uterine bleeding- ovulatory dysfunction (AUB-O)
- Abnormal uterine bleeding- polyp (AUB-P)

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AUB Knowledge Check

A 38-year-old woman, gravida 2, para 2, presents with intermenstrual spotting. Physical examination results do not indicate a likely etiology of her bleeding. Transvaginal ultrasonography findings suggest a possible endometrial polyp, but the results are not diagnostic. What is the best next step in evaluation?

- Transabdominal ultrasonography
- Saline-infused sonohysterography
- Computed tomography
- Magnetic resonance imaging

AUB Knowledge Check

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- Transabdominal ultrasonography
- **Saline-infused sonohysterography**
- Computed tomography
- Magnetic resonance imaging

Saline-infusion sonohysterography is the next step if transvaginal ultrasonography is inadequate for diagnosis or further assessment of intracavitary uterine lesions is needed. Routine use of MRI or CT is not recommended for the evaluation of abnormal uterine bleeding.

AUB Knowledge Check

What characteristic finding on pelvic ultrasonographic evaluation is most strongly suggestive of adenomyosis?

- Heterogeneous endometrium
- Hypoechoic masses
- Myometrial calcifications
- Myometrial cysts
- Thickened endometrium

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Ultrasonographic characteristics of adenomyosis include heterogeneous myometrium, myometrial cysts, asymmetric myometrial thickness, and subendometrial echogenic linear striations. Hypoechoic masses are consistent with myomas. Calcifications can be seen inside myomas as well.

AUB Knowledge Check

A 30-year-old woman, gravida 1, para 1, presents with intermenstrual bleeding. She reports 1–2 days of midcycle of bleeding in addition to her regular menses. The rest of her medical history is unremarkable. Your physical examination findings are normal. An ultrasonographic evaluation shows thickened endometrium with a slightly hyperechoic focus. What is the best next step in management?

- Sonohystography
- Hysterosalpingography
- Endometrial biopsy
- Operative hysteroscopy
- Dilation and curettage

AUB Knowledge Check

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- **Sonohystography**
- Hysterosalpingography
- Endometrial biopsy
- Operative hysteroscopy
- Dilation and curettage

Sonohysterography (SHG) or saline-infused ultrasonography is a test in which the uterus is filled with saline, allowing the physician to assess for intracavitary lesions. The DDX for this hyperechoic mass is endometrial polyp, intracavitary myoma, a blood clot, or another pathologic mass. SHG is a good first step towards differentiating the intrauterine mass. EMB is not indicated in a 30-year-old woman with no other risk factors for endometrial cancer. Hysterosalpingography is appropriate to assess the fallopian tubes and the uterine cavity but would not be an appropriate next step in this patient. Operative hysteroscopy and dilation and curettage may be eventually appropriate in the treatment of the intrauterine mass.

AUB Knowledge Check

An 18-year-old nulligravid woman presents for evaluation of heavy regular menses. She was recently diagnosed with anemia by her primary care provider and began taking iron supplementation. In addition to a full history and physical examination, what serum laboratory testing is indicated?

- Luteinizing hormone and follicle-stimulating hormone levels (LH and FSH)
- Prolactin level
- Total and free testosterone levels
- Lupus anticoagulant
- Prothrombin time and partial thromboplastin time

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- Prolactin level
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- **Prothrombin time and partial thromboplastin time**

In a young woman with heavy menses since menarche, there is a chance of an underlying bleeding disorder such as von Willebrand disease. In addition to a complete blood count, the physician should order testing of prothrombin time/partial thromboplastin time, as well as von Willebrand-ristocetin cofactor activity, von Willebrand factor antigen, and Factor VIII level. Assessment of serum levels of luteinizing hormone, follicle-stimulating hormone level, prolactin, total testosterone, and free testosterone are all indicated in the case of irregular menses or oligomenorrhea. Lupus anticoagulant testing is indicated in women with history of blood clots or recurrent miscarriages.