Vaginitis and Abnormal Vaginal Bleeding

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• There are no relevant financial relationships with any commercial interests to disclose

Vulvovaginal Symptoms: Differential Diagnosis

<table>
<thead>
<tr>
<th>Category</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infections</td>
<td>Vaginal trichomoniasis (VT)</td>
</tr>
<tr>
<td></td>
<td>Bacterial vaginosis (BV)</td>
</tr>
<tr>
<td></td>
<td>Vulvovaginal candidiasis (VVC)</td>
</tr>
<tr>
<td>Skin Conditions</td>
<td>Fungal vulvitis (candida, tinea)</td>
</tr>
<tr>
<td></td>
<td>Contact dermatitis (irritant, allergic)</td>
</tr>
<tr>
<td></td>
<td>Vulvar dermatoses (LS, LP, LSC)</td>
</tr>
<tr>
<td></td>
<td>Vulvar intraepithelial neoplasia (VIN)</td>
</tr>
<tr>
<td>Psychogenic</td>
<td>Physiologic, psychogenic</td>
</tr>
</tbody>
</table>

CDC 2010: Trichomoniasis Screening and Testing

• Screening indications
  – HIV positive women: annually
  – Consider if “at risk”: new/multiple sex partners, history of STI, inconsistent condom use, sex work, IDU

• Newer assays
  – Rapid antigen test: sensitivity, specificity vs. wet mount
  – Aptima TMA T. vaginalis Analyte Specific Reagent (ASR)

• Other testing situations
  – Suspect trich but NaCl slide neg → culture or newer assays
  – Pap with trich → confirm if low risk

• Consider retesting 3 months after treatment
Trichomoniasis: Laboratory Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Cost</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aptima TMA</td>
<td>+4 (98%)</td>
<td>+3 (98%)</td>
<td>$$$</td>
<td>NAAT (like GC/Ct)</td>
</tr>
<tr>
<td>Culture</td>
<td>+3 (83%)</td>
<td>+4 (100%)</td>
<td>$$$</td>
<td>Not in most labs</td>
</tr>
<tr>
<td>Point of care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Affirm VP III</td>
<td>+3</td>
<td>+4</td>
<td>$$$</td>
<td>DNA probe</td>
</tr>
<tr>
<td>• OSOM Rapid</td>
<td>+3 (90%)</td>
<td>+4 (100%)</td>
<td>$</td>
<td>CLIA waived</td>
</tr>
<tr>
<td>NaCl suspension</td>
<td>+2 (56%)</td>
<td>+4 (100%)</td>
<td>¢¢</td>
<td>1st line</td>
</tr>
<tr>
<td>Pap smear</td>
<td>+2</td>
<td>+3</td>
<td>n/a</td>
<td>Confirm if low prevalence</td>
</tr>
</tbody>
</table>

Accuracy data: Huppert CID 2007

CDC 2010: Vaginal Trichomoniasis Treatment

• **Recommended regimen**
  – Metronidazole 2 grams PO single dose
  – Tinidazole 2 grams PO single dose

• **Alternative regimen** (preferred for HIV infected women)
  – Metronidazole 500 mg PO BiD x 7 days

• **Metronidazole safe at all gestational ages**
  – Limited pregnancy data on Tinidazole
  – Treat sex partner(s)
  – Targeted screening for other STIs: GC, Ct, syphilis, HIV

CDC 2010: VT Treatment Failure

• **Re-treat with either**
  – Tinidazole 2 g PO single dose
  – Metronidazole 500 mg PO BiD x 7 days

• **If repeat failure, treat with**
  – Metronidazole 2 grams po x 3-5 days

• **If repeat failure**
  – Tinidazole 2-3 g po plus 1-1.5 g vaginally x14 days

• **Arrange for susceptibility testing: Call CDC!!**
  – 770-488-4115

BV: Pathophysiology

• **Non-inflammatory** bacterial overgrowth
  – 100 x increase *Gardnerella vaginalis*
  – 1000 x increase in anaerobes
  – More pathogen types (*Mobiluncus, Mycoplasmas*)

• Suppression of H$_2$O$_2$-producing *Lactobacillus crispatus* and *L. jensenii* (*L. acidophilus* is not present)

• >50% women *carry G. vaginalis* in their vaginal flora in the absence of BV
  – Bacterial “C/S” of vaginal fluid doesn’t help in the diagnosis of BV….or of any other vaginal infection
BV: Sexually Associated or Transmitted?

- "Sexually associated" in heterosexuals
  - Rare in virginal women
  - Greater risk of BV with multiple male partners
  - Condom use decreases risk, *But*
  - No BV carrier state identified in men
  - Treatment of partner does not affect recurrences
- Women having sex with women (WSW)
  - Infected vaginal fluid between women causes BV
  - Studies of concurrence in lesbian couples suggest horizontal transmission

BV: Clinical Diagnosis

- **Amsel Criteria**: 3 or more of
  - Homogenous white discharge
  - Amine odor ("whiff" test)
  - pH > 4.5 (most sensitive)
  - Clue cells > 20% (most specific)
- **Spiegel criteria, Nugent score**: Gram stain with
  - Few or no gram positive *Lactobacillus* spp.
  - Excess of other gram negative morphotypes

BV: Laboratory Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensit</th>
<th>Specif</th>
<th>Cost</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nugent score</td>
<td>+4</td>
<td>+4</td>
<td>$C$</td>
<td>Labor intensive</td>
</tr>
<tr>
<td>Point of care tests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affirm VP III</td>
<td>+4</td>
<td>+3</td>
<td>$$3$$</td>
<td>DNA probe</td>
</tr>
<tr>
<td>OSOM BV Blue</td>
<td>+3</td>
<td>+3</td>
<td>$C$</td>
<td>CLIA moderate</td>
</tr>
<tr>
<td>G vag PIP</td>
<td>+2</td>
<td>+3</td>
<td>$$3$$</td>
<td>CLIA moderate</td>
</tr>
<tr>
<td>pH + amines</td>
<td>+2</td>
<td>+2</td>
<td>$</td>
<td>CLIA waived</td>
</tr>
<tr>
<td>Amsel criteria</td>
<td>+3</td>
<td>+2</td>
<td>$C$</td>
<td>1st line</td>
</tr>
<tr>
<td>Pap smear</td>
<td>+1</td>
<td>+2-3</td>
<td>n/a</td>
<td>Coccobacilli</td>
</tr>
</tbody>
</table>

Who Should Be Tested for BV?

- **Routine screening** (asymptomatic): not indicated
- **Standard diagnostic testing**
  - Check discharge, amines, vaginal pH, clue cells
- **Microscopy not available or inconclusive**
  - Affirm VP III
  - OSOM BV Blue
  - *G vaginalis* PIP, pH+amine test cards
- **"Shift in vaginal flora" on cervical cytology**
  - No consensus, but poor correlation with BV...most experts recommend no further follow up
**CDC 2010: BV Treatment**

**Recommended regimens**
- Metronidazole 500 mg PO BID x 7 days
- Metronidazole gel 0.75% 5g per vagina QD x 5 days
- Clindamycin 2% cream 5g per vagina QHS x 7 days

**Alternative regimens**
- Tinidazole 2 g PO QD for 3 days
- Tinidazole 1 g PO QD for 5 days
- Clindamycin 300 mg PO BID x 7 days
- Clindamycin ovules 100 mg per vagina QHS x 3 days

**CDC 2010: Recurrent BV**

- Consider suppression with metronidazole vaginal gel twice weekly for 4-6 months (after full initial treatment)
- No evidence yet to support use of probiotics
- Don’t douche...with anything!
- Use of condoms by male partners may reduce recurrences
- Clean sex toys (or use condoms) between uses
- Avoid vaginal insertion after anal insertion of a finger or penis

**CDC 2010: VVC Classification**

- **Uncomplicated VVC (80-90%)**
  - Sporadic or infrequent VVC, and
  - Mild-to-moderate VVC, and
  - Likely to be Candida albicans, and
  - Immunocompetant
- **Complicated VVC (10-20%)**
  - Recurrent VVC, or
  - Severe VVC, or
  - Non-albicans candidiasis, or
  - Uncontrolled DM, immunosuppression, pregnancy

**VVC: Laboratory**

- **KOH suspension**
  - C. albicans: pseudohyphae and blastospores (buds)
  - C. glabrata: blastospores only
- **NaCl suspension**: many WBC, normal lactobacillus
- **pH**: 4-6
- **Amine test**: negative
- **Confirmatory tests**
  - Point of care test: Affirm VP III
  - Candida culture (not: fungus culture)
  - Candida PCR
### CDC 2010: Uncomplicated VVC Treatments

- **Non-pregnant women**
  - 3 and 7 day topicals have equal efficacy and price
  - Offer *either*: 1 or 3 day topical or oral fluconazole
    - Topical: quickly soothing, but inconvenient
    - Oral: convenient, but effect is not immediate
- **If first treatment course fails**
  - Re-confirm diagnosis (r/o dual infection)
  - Treat with an alternate antifungal drug
  - Perform Candida culture to confirm and speciate
- **No role for nystatin, candididin**

### CDC 2010: Complicated VVC Treatment

#### Severe VVC
- Advanced findings: erythema, excoriation, fissures
- Topical azole therapy for 7-14 days, or

#### Compromised host
- Topical azole treatment for 7-14 days
- Fluconazole 150 mg PO; repeat Q3 days 1-2 times

#### Pregnancy
- Topical azoles for 7 days

### CDC 2010: Complicated VVC Treatment

**Recurrent VVC (RVVC)**
- ≥ 4 episodes of symptomatic VVC per year
- Most women have no predisposing condition
  - Partners are rarely source of infection
- Confirm with *Candidal* culture before maintenance therapy; also check for non-albicans species
- Early treatment regimen: self-medication 3 days with onset of symptoms
**CDC 2010: Complicated VVC Treatment**

- **Recurrent VVC: Treatment**
  - Treat for 7-14 days of topical therapy or fluconazole 150 mg PO q 72° x3 doses, then
  - Maintenance therapy x 6 months
    - Fluconazole 100-200 mg PO 1-2 per week
    - Itraconazole 100 mg/wk or 400 mg/month
    - Clotrimazole 500 mg suppos 1 per week
    - Boric acid 600 mg suppos QD x14, then BIW
    - Gentian violet: Q week x2, Q month X 3-6 mo

**Vaginal Bleeding...What’s Normal?**

- Onset of menses
  - By 16 years old *with* 2° sex characteristics
  - Start evaluation at 14 years of age if no sexual development
- Cycle length: 24-35 days
- Menstrual days: 2-7 days
- Menstrual flow: 20-80 cc. per menses
  - Average flow: 35 cc. per menses

**Abnormal Vaginal Bleeding (AVB)**

*Symptom Definitions*

- Abnormal *amount* of bleeding
  - **Menorrhagia** (hypermenorrhea)
    - Prolonged duration of menses
    - Increased amount of bleeding per day
  - **Hypomenorrhea**
    - Shorter menses
    - Less flow per day

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  - **Hypomenorrhea**
    - Shorter menses
    - Less flow per day
Abnormal Vaginal Bleeding
Symptom Definitions

- Abnormal *timing* of bleeding: REGULAR Cycles
  - Polymenorrhea: cycle length < 24 days
    
    | 7 days | 14 days | 7 days | 14 days | 7 days |

  - Intermenstrual bleeding: (IMB)
    
    | 7 days | 21 days | 7 days |

  - Post-coital bleeding (PCB)
    
    | 7 days | intercourse | 7 days | intercourse | 7 days |

- Abnormal *timing* of bleeding: IRREGULAR Cycles
  - Metrorrhagia
    - Light “irregularly irregular” bleeding
  - Menometrorrhagia
    - Heavy “irregularly irregular” bleeding
    
    | 7 days | 3 | 2 | 10 days | 2 | 4 |

  - Post-menopausal: bleeding ≥1 year after menopause

Abnormal Vaginal Bleeding
Symptom Definitions

- Decreased *frequency* of bleeding
  - Oligomenorrhea
    - No bleeding 36 days- 3 months
  - Amenorrhea
    - No bleeding for...
      - 3 cycle intervals *or*
      - 6 months (in oligomenorrheic women)

Abnormal Vaginal Bleeding (AVB)

- Is the patient pregnant?
- Is it uterine?
- Is the bleeding pattern ovulatory or anovulatory?

<table>
<thead>
<tr>
<th>Ovulatory = Regular</th>
<th>Anovulatory = Irregular or no bleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menorrhagia</td>
<td>Metrorrhagia/MMR</td>
</tr>
<tr>
<td>Hypomenorrhea</td>
<td>Oligomenorrhea</td>
</tr>
<tr>
<td>Polymenorrhea</td>
<td>Amenorrhea</td>
</tr>
<tr>
<td>IMB</td>
<td>Post-menopausal</td>
</tr>
<tr>
<td>PCB</td>
<td></td>
</tr>
</tbody>
</table>
Non-Uterine Conditions: Cervix

- **Cervix Neoplasms:** *IMB, PCB, PMB*
  - Squamous cell carcinoma
  - Adenocarcinoma
- **Infections:** *IMB, PCB, menorrhagia*
  - Mucopurulent cervicitis (chlamydia, gonorrhea, mycoplasma hominis)
- **Benign cervical ectropion:** PCB
  - Exposed columnar epithelial cells on ectocervix
  - Red appearance; bleeds to touch

Non-Uterine Conditions: Vagina

- **Vaginal inflammation** *(IMB, PCB, PMB)*
  - Atrophic vaginitis
  - Severe vaginal trichomoniasis
- **Trauma/ foreign body**
  - Vaginal wall laceration *(PCB)*
  - Hymeneal ring tear/laceration *(PCB)*
  - Vaginal foreign body (esp. pre-menarchal bleeding)
- **Vaginal neoplasms**
  - Squamous cell cancer, clear cell (DES)
  - Childhood tumors

Non-Uterine Conditions: Other

- **Urethra** *(post-void bleeding)*
  - Urethral caruncle
  - Squamous or transitional cell cancer
- **Anus** *(bleeding after wiping)*
  - External or internal hemorrhoid
  - Anal fissure
  - Genital warts
  - Squamous cell cancer
Munro MG, et al, FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age, Int J Gynecol Obstet (2011)

**FIGO System for AUB, 2011**

<table>
<thead>
<tr>
<th>Structural Conditions</th>
<th>Non-Structural Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyp</td>
<td>Coagulopathy</td>
</tr>
<tr>
<td>Adenomyosis</td>
<td>Ovulatory dysfunction</td>
</tr>
<tr>
<td>Leiomyoma</td>
<td>Endometrial</td>
</tr>
<tr>
<td>Malignancy &amp; hyperplasia</td>
<td>Exogenous</td>
</tr>
<tr>
<td>Other</td>
<td>Not yet classified</td>
</tr>
</tbody>
</table>

**AUB: Structural Conditions**

- **P**: Endometrial polyp
  - IMB or PCB in 30-50 year old woman
- **A**: Adenomyosis
  - Dysmenorrhea, dyspareunia, chronic pelvic pain, sometimes menorrhagia
- **L**: Leiomyoma
  - Submucous myoma
  - Menorrhagia; rarely IMB; never metrorrhagia

**AUB: Structural Conditions**

- **M**: Malignancy and hyperplasia
  - Adenomatous hyperplasia (AH) → atypical AH → endometrial carcinoma
    - Post-menopausal bleeding
    - Recurrent perimenopausal metrorrhagia
    - Chronic anovulator (PCOS) with metrorrhagia
  - Leiomyosarcoma
    - Post-menopausal bleeding
**COEIN: Coagulopathy**

- Clotting factor deficiency or defect
  - Liver disease
  - Congenital (Von Willebrand's Disease)
- Platelet deficiency (thrombocytopenia) with platelet count <20,000/mm³
  - Idiopathic thrombocytopenic purpura (ITP)
  - Aplastic anemia
- Platelet function defects

**Screen for underlying disorder of hemostasis if any of**

- Heavy menstrual bleeding since menarche
- One of the following
  - Post-partum hemorrhage
  - Bleeding associated with surgery
  - Bleeding associated with dental work
- Two or more of the following
  - Bruising 1-2 times per month
  - Epistaxis 1-2 times per month
  - Frequent gum bleeding
  - Family history of bleeding symptoms

Munro M, Int J Gynecol Obstet (2011)

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**COEIN: Ovulatory**

- Anovulation
  - Age: peri-menarche and perimenopause
  - PCOS
  - Stress
- Hypothyroidism
- Luteal phase defects

**Normal Ovarian Hormone Cycle**

- Estrogen
- Progesterone

Precipitous drop of E+P
- Synchronous
- Universal
- Withdrawal Bleed

*ovulation* — *menstruation*
Abnormal Ovarian Hormone Cycles

**COEIN: Ovulatory**
- Mainly due to anovulatory bleeding
  - **Age-related**: peri-menarche, perimenopause
  - **Estrogenic**: unopposed exogenous or endogenous estrogen
  - **Androgenic**: PCOS; CAH, acute stress
  - **Systemic**: Renal disease, liver disease
- Diagnosis of exclusion
  - Menometrorrhagia not due to anatomic lesion, medications, pregnancy

**COEIN: Ovulatory**
- **Hyperthyroidism or hypothyroidism**
  - Bleeding can be excessive, light, or irregular
  - Only severe, uncorrected thyroid disease causes abnormal bleeding patterns
  - Normal pattern when corrected to euthyroid
  - 1° hypothyroidism assoc. with 2° amenorrhea
  - Low $T_4 \rightarrow$ high TRH $\rightarrow$ high TSH $\rightarrow$ normal $T_4$
  - $\downarrow$ high PRL $\rightarrow$ amenorrhea + galactorrhea

**COEIN: Ovulatory**
- **Luteal Phase Defect (LPD)**
  - Luteal phase lasts 7-10 days (vs. 14 days) or inadequate peak luteal phase progesterone ($P$)
- Diagnosis
  - Polymenorrhea (“periods every 2 weeks”)
  - Mid-luteal phase $P$ level between 4-8 ng/ml
  - Endometrial biopsy $>$2 days out of phase
- Management
  - Unexplained infertility: clomiphene, $P$ supplement
  - Pregnancy not desired: observation or OCs to cycle

**Estrogen**
**Progesterone**
**Amenorrhea**
**E withdrawal bleed**
**Menometrorrhagia: heavy, irregular bleeding**
**COEIN: Endometrial**

- **Idiopathic**
  - Unexplained menorrhagia
- **Endometritis**
  - Post-partum
  - Post-abortal endometritis
  - Endometritis component of PID
- In teens, PID commonly presents with abnormal bleeding (menorrhagia, IMB), not pelvic pain
  - Any teen with abnormal bleeding + pelvic pain requires bimanual exam to evaluate for PID

**COEIN: Iatrogenic Conditions**

- **Anticoagulants**
  - Over-anticoagulation: menorrhagia
  - Therapeutic levels will not cause bleeding problems
- **Chronic steroids, opiates**
- **Progestin-containing contraceptives**
- **Intrauterine Contraception (IUC)**
  - "Normal" side effect menorrhagia
  - PID, pregnancy (IUP or ectopic), perforation, expulsion

**COEIN: Not Classified**

- Chronic endometritis
- AVM
- Myometrial hypertrophy

**AVB: History**

- **Is the patient pregnant?**
  - Pregnancy symptoms, esp. breast tenderness
  - Intercourse pattern
  - Contraceptive use
- **Is it uterine?**
  - Coincidence with bowel movement and wiping, during or after urination
  - Pain or irritation of vagina, introitus, vulva, perineum, or anal skin
AVB: History

- Is bleeding ovulatory or anovulatory?
  - Bleeding pattern: regular, irregular, none
  - Molimenal symptoms: only in ovulatory cycles
  - Previous history of menstrual disorders
  - Recent onset weight gain or hirsutism
  - Menopausal symptoms
  - History of excess bleeding; coagulation disorders
  - Current and past medications; street drugs
  - Chronic medical illnesses or conditions
  - Nipple discharge from breasts

AVB: Physical Exam

- General: BMI > 30
- Skin: acne, hirsutism, acanthosis nigricans; bruising
- Breasts: galactorrhea
- Abdomen: uterine enlargement, abdominal pain
- Pelvic exam
  - Vulva and perineum
  - Anal and peri-anal skin
  - Speculum: vaginal walls and cervix
  - Bimanual: uterine enlargement, softness, masses

AVB: Laboratory

- Urine highly sensitive pregnancy test
  - Quantitative B-hCG is unnecessary
- CBC
  - Find severe anemia; baseline value for observation
  - Platelet estimation (detect thrombocytopenia)
- TSH, Prolactin
  - Amenorrhea or recurrent anovulatory bleeds only
- FSH, LH levels are unnecessary

AVB: Imaging Studies

- Mainly for evaluation of ovulatory AUB if no response to treatment or suspect anatomic defect
- Not useful for demonstrating or excluding hyperplasia in premenopausal women
- Saline infusion sonogram (SIS) helpful for polyps, submucus myomata
  - 80% sensitivity, 69% specificity compared to hysteroscopy
**AVB: Presentation-based Management**

- Acute dysfunctional (anovulatory) bleeding
- Recurrent dysfunctional bleeding
- Post-coital bleeding
- Recurrent (ovulatory) menorrhagia
- Postmenopausal bleeding (PMB)

*Note: a menstrual calendar will help to differentiate these conditions*

**Management of Acute DUB**

- Substitute a pharmacologic luteal phase for missed physiologic luteal phase
- If **minimal bleeding** for a few days
  - Rx MPA 10-20 mg QD (or microP, 200 BID) x10d
  - Bleeding stops < 3 d; menses after progestin ended
- **Moderate or heavy bleeding > 3 days**
  - Monophasic OC taken BID-TID x 7 days, then daily OC for 3 weeks (or longer)
  - Using “OC taper” and then stopping is illogical
- **Torrential bleed**: surgical curettage (MUA)

**Oral MPA and COCs for Acute Uterine Bleeding**
Munro MG, et al Obstet Gynecol 2006;108:924-9

- 40 women with non-anatomic AUB randomized to
  - MPA 20 mg TiD, then QD for 3 weeks vs
  - COC (1 mg nor + 35 mcg EE) TiD x1 week, QD x3 wks
- **Results**
  - Median time to bleeding cessation was 3 days
  - Cessation in 88% OC group, 76% in MPA group
  - Surgery avoided in 100% MPA, 95% COC subjects
  - Compliance similar in both groups
  - “Would use again”...81% MPA, 69% COC

**Management of Recurrent DUB**

- Pregnancy: cycle with clomiphene or metformin
- Contraception: cycle with OC
- Not interested in pregnancy or contraception
  - MPA or microP first 10-14 days each month or every other month if pt prefers fewer menses
  - Place LNG-IUS (Mirena)
  - Consider endometrial ablation if childbearing completed
- Perimenopausal bleeding
  - Once hyperplasia excluded, the goal is cycle control
    - Low estrogen dose OC
    - Cyclic sequential EPT
Recurrent Menorrhagia

- **Differential diagnosis**
  - Endometrial polyp
  - Submucus myoma
  - Coagulopathy: vWD, ITP, liver disease
  - Idiopathic

- **Diagnostic**
  - Coag panel: consult with hematologist
  - Saline Infusion Sonography (SIS)
  - Hysteroscopy
  - NOT endometrial biopsy or pelvic US alone

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Recurrent Menorrhagia

- **Submucous myoma (fibroids)**
  - Medical: OCs, progestins, tranexamic acid
  - LNG-IUS (Mirena)
  - Myomectomy
    - Laparoscopy, hysteroscopy, or laparotomy
  - Uterine artery embolization (UAE)
  - Hysterectomy (VH, LAVH, LASH)
  - GnRH-a (Lupron) is given for 1-3 months *only*
    - To facilitate surgery by reducing myoma volume
    - To induce amenorrhea to treat severe anemia

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Recurrent Menorrhagia

- **Idiopathic menorrhagia**
  - Oral contraceptives (extended regimen or cycle)
  - NSAIDS (before and during menses)
    - Ibuprofen (400 mg tid), naproxen Na (275 mg every 6 hours after a loading dose of 550 mg)
  - LNG intrauterine system (Mirena)
  - Tranexamic acid (Lysteda)
  - Endometrial ablation
  - Hysterectomy (VH, LAVH, LASH)

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Tranexamic Acid (Lysteda) for HMB

- FDA: treatment of cyclic heavy menstrual bleeding
- Mechanism of action is antifibrinolytic
- Use: 1,300 mg (two 650 mg tablets) TID for up to 5 days
- **Contraindications**
  - Active thromboembolic disease
  - History or intrinsic risk of DVT
- **Cautions**
  - Concomitant therapy with OCs may further increase the risk of blood clots, stroke, or MI
  - Women using CHC should use only if a strong medical need and benefit outweighs risk of TE event
Global Endometrial Ablation

- Bipolar Dessication (NovaSure ™)
- Cryoablation (Her Option™)
- Thermal Balloon (Thermachoice ™, Caviturm®)
- Microwave Endometrial Ablation (Microsulis)
- Hydrothermal Ablation (Hydro ThermAblator ™)
- Radiofrequency Thermal Balloon

Endometrial Ablation vs Hysterectomy

- **Advantages**
  - Office procedure or outpatient surgery
  - Very low rate of major complications
  - Rapid post operative recovery period
  - Less time consuming and costly vs hysterectomy

- **Disadvantages**
  - Amenorrhea in 50-70%, but >95% have less bleeding
  - May fail over time; 2nd ablation required in 5-10%
  - Reduces fertility, but not highly effective contraception
  - Cervical, endometrial cancer may occur