Management of abnormal uterine bleeding

Jody Steinauer, MD, MAS
Dept. Ob/Gyn & Reproductive Sciences
University of California, San Francisco

UCSF University of California San Francisco advancing health worldwide

Disclosures

July 4, 2017.
I have no disclosures.

The Questions

- Too much – abnormal uterine bleeding
  - Differential and approach to work-up
- Too much – fibroids
- Too fast: She's hemorrhaging—what do I do?
- Side effect: due to hormonal contraception

1: AUB and 2: fibroids
3: Acute hemorrhage
4: Contraceptive side effects
5: Bleeding in pregnancy

Case 1

A 46 year-old woman reports her periods have become increasingly irregular and heavy over the last 6-8 months. Sometimes they come 2 times per month and sometimes there are 2 months between. LMP 2 months ago. She bleeds 10 days with clots and frequently bleeds through pads to her clothes. She also has diabetes and is obese.

Q1: Which is the first test should you order in this patient?

1. FSH
2. Testosterone & DHEAS
3. Urine hcg
4. TSH
5. Transvaginal Ultrasound (TVUS)
6. Endometrial Biopsy (EMB)

Step 1: Pregnant?

Pregnant

- Ectopic
- S[illegible]bortion
- Thre[illegible]Abortion
- M[illegible]acy
- Trauma
- Other causes

Not Pregnant

- Anovulation ***
- Anatomic/structural **
- Neoplastic *
- Infectious
- Iatrogenic
- Non-gynecologic

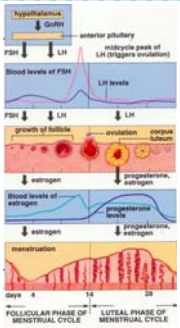
* = Most likely for this patient

Terminology: What is abnormal?

- Normal: Cycle= 28 days (21-35); Length=2-7 days; heaviness=self-defined
- Too little bleeding: amenorrhea or oligomenorrhea
- Too much bleeding: Menorrhagia (regular timing but heavy (according to patient or >80cc) OR long flow (>7 days)
- Irregular bleeding: Metrorrhagia, intermenstrual or post-coital bleeding
- Irregular and Excessive: Menometrorrhagia

- **Preferred term for non-pregnant heavy and/or irregular bleeding = Abnormal Uterine Bleeding (AUB)**

Pathophysiology: Anovulatory Bleeding



Bricks & Mortar

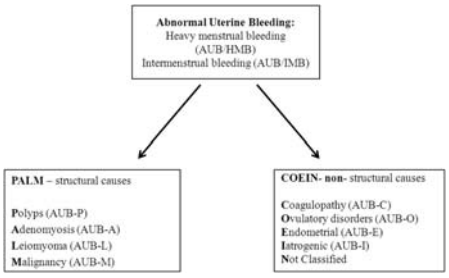
Estrogen=Bricks, build endometrium

Progesterone (P) =Mortar, stabilizes, only have P if ovulate

Normal menses: Withdrawal of P causes wall to fall down, all at once (orderly bleed)

Anovulation: No P so when wall grows too tall, it falls. It is heavy when wall is tall. Bricks can also fall intermittently & incompletely – irregularly, irregular

Abnormal Uterine Bleeding



Reference: AUB Differential

PALM-COEIN

Not Pregnant

- Anovulation
- Anatomic
- Neoplastic
- Infectious
- Non-Gynecologic

Uterus: Polyp, adenomyosis, leiomyoma, atrophy
Cervix: polyp, atrophy, trauma
Vagina: atrophy, trauma

Uterus: Hyperplasia, **malignancy**
Cervix: Dysplasia, **malignancy**
Ovary: hormone producing tumor

Uterus: Endometritis, PID
Cervix: Cervicitis
Vagina: Vaginitis (eg Trich)

Coagulopathy (vWD), severe renal or liver dz, GI or GU source

History and Physical Examination

- Hx: bleeding pattern, symptoms of anemia, sexual & reproductive history, chronic medical illness, medication
- Acute v. chronic
- PE: signs of hypovolemia and anemia, thyroid examination, gynecologic exam, abdominal examination, (screening for cervical dysplasia and STI)
  - Obesity: up to 60% of women who do not ovulate are obese – increased estradiol & testosterone; elevated insulin → disordered follicular development

Initial Work-up: Menometrorrhagia

- Always: Urine pregnancy
- Usually: TSH
- Maybe: Hct, r/o coagulopathy
- Maybe: EMB (Endometrial Biopsy)
- Maybe but later: Transvaginal Ultrasound
- Usually not necessary: FSH, LH, Testosterone, Estradiol

A Rational Approach to EMB

Post-Menopause: ALL women WITH ANY BLEEDING (except 4-6 months after HT)

Recent onset irregular bleeding: Consider treating first and if bleeding normalizes, no need for EMB

>50: All women with recurrent, irregular bleeding (consider not doing if periods light and spacing out)

45-50: Recurrent irregular bleeding plus ≥1 risk factor OR > 6 mos menometrorrhagia (consider not doing if periods light and spacing out)

<45: Long hx (>2 yr?) of untreated anovulatory bleeding or failed medical management

EMB is not perfectly sensitive so further evaluation mandatory if:

1. Persistent AUB after negative EMB
2. Persistent AUB after 3-6 months of medical therapy

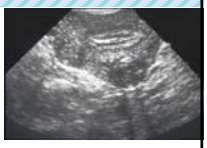
Do all women with AUB need an ultrasound?

Although TVUS is the best imaging choice for pelvic pathology (ie better than MRI, CT)….

- 80% with heavy menstrual bleeding have no anatomic pathology
- Incidental findings such as functional ovarian cysts and small fibroids (~50%) are often found leading to anxiety and unnecessary treatments
- SO….treat first, TVUS if treatment fails

What about U/S instead of EMB for post-menopausal bleeding?

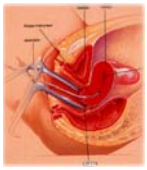
Transvaginal Ultrasound



- Measure endometrial stripe
- Abnormal= >4 mm (or 5)
- Non-specific: myomas, polyps also cause thick EM
- Operator skill mandatory
- NOT USEFUL PRE-MENOPAUSE

TVUS vs EMB to Detect Cancer
(in post-menopausal women)

TVUS		EMB
96%	Sensitivity	94%
61%	Specificity	99%
99%	NPV	99%
40-50%	Further w/u necessary	? <5%



Can offer patient choice as long as either is quickly available and patient understands she may need EMB after U/S

Q2: You decide to do a urine pregnancy test and check her TSH – which is the most appropriate next test?

1. FSH
2. Testosterone & DHEAS
3. Serum beta-HCG
4. Transvaginal Ultrasound
5. Endometrial Biopsy

Q2: You decide to do a urine pregnancy test and check her TSH – which is the most appropriate next test?

1. FSH
2. Testosterone & DHEAS
3. Serum beta-HCG
4. Transvaginal Ultrasound
5. Endometrial Biopsy ←

A 46 year-old woman reports her periods have become increasingly irregular and heavy over the last 6-8 months. Sometimes they come 2 times per month and sometimes there are 2 months between. LMP 2 months ago. She bleeds 10 days with clots and frequently bleeds through pads to her clothes. She also has diabetes and is obese.

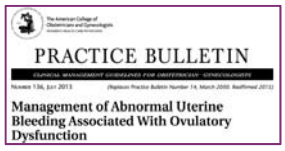
EMB="Disordered Proliferative" How do I stop the bleeding?

<u>Medical</u>

NSAID's
E+P pill, patch, ring
Oral Progestin
Progestin IUD
IM Progestin
GnRH agonist
Tranexamic Acid

<u>Surgical</u>

Endometrial ablation
D&C/Hysteroscopy
Hysterectomy


PRACTICE BULLETIN

Management of Abnormal Uterine Bleeding Associated With Ovulatory Dysfunction

Treatment of AUB: NSAIDs

- Suppress prostaglandin synthesis, increase platelet aggregation, and reduce menstrual blood loss
- Reduces blood loss by 40%
- Use alone or with other treatments
- Prescribe 5 days ATC
  - Ibuprofen, mefenamic acid, naproxen

Treatment of AUB: CHC

- CHC – pill, patch, ring – improve cycle control, decrease menstrual blood loss by 40% when used traditionally or continuously
  - One COC (with estradiol) approved by FDA for heavy menstrual bleeding
  - COCs often used to treat acute and chronic AUB
  - Few studies support up to 70% decreased EBL with COC and one study with vaginal ring

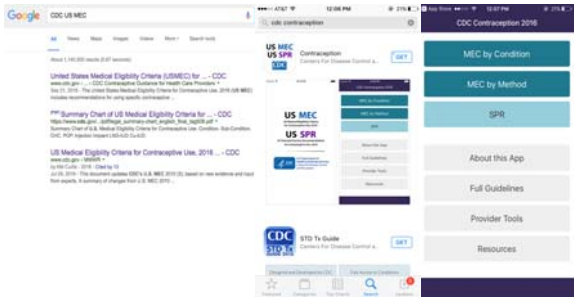
Treatment of AUB: Progestins

- Oral progestin
  - If ovulatory AUB = HMB: daily or days 5-26 "extended use" progestin decreases blood loss (MPA 2.5-10mg qd, norethindrone 2.5-5mg qd, NETA 5 TID)
  - Low satisfaction with extended use
  - If anovulatory: cyclic progestin -12-14 d/month improves menses in half of women
- Injectable progestin
  - 50% amenorrhea after 1 year, irreg. bleeding in first few months and 50% at one year
- Intrauterine progestin
  - Significant decrease in blood loss, superior to other progestins and CHCs

First Line Hormonal Treatments

- First choice: Levonorgestrel IUD
  - >80% reduction in blood loss, decreased cramping, prevents/treats hyperplasia, highly effective birth control
  - Blood loss and satisfaction comparable to ablation, satisfaction comparable to hysterectomy
  - Very few contraindications
- 2nd choice: combined contraceptives (pill, patch, ring) or oral progestin (cyclic v. daily) or progestin injection
  - Decreases irregular perimenopausal bleeding
  - Any type ok, 20 mcg estrogen preferred for women >40
  - Estrogen contraindications: smokers>35, HTN, complicated DM, multiple RF for CAD, h/o DVT, migraines with aura

Where do you find the US MEC and SPR?



Birth Control Methods

Medical Condition

Condition	Sub-Condition	Cu-IUD		LNG-IUD		Implant		DMPA		POP		CHC	
		I	C	I	C	I	C	I	C	I	C	I	C
Deep venous thrombosis (DVT)/Pulmonary embolism (PE)	a) History of DVT/PE, not receiving anticoagulant therapy												
	i) Higher risk for recurrent DVT/PE	1		2		2		2		2		4	
	ii) Lower risk for recurrent DVT/PE	1		2		2		2		2		3	
	b) Acute DVT/PE	2		2		2		2		2		4	
	c) DVT/PE and established anticoagulant therapy for at least 3 months												
	i) Higher risk for recurrent DVT/PE	2		2		2		2		2		4[a]	
	ii) Lower risk for recurrent DVT/PE	2		2		2		2		2		3[a]	
	d) Family history (first-degree relatives)	1		1		1		1		1		2	
	e) Major surgery												
	i) With prolonged immobilization	1		2		2		2		2		4	
	ii) Without prolonged immobilization	1		1		1		1		1		2	
	f) Minor surgery without immobilization	1		1		1		1		1		1	

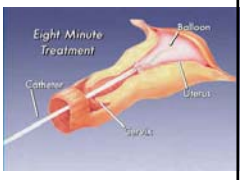
MEC Category

Treatment of AUB: Tranexamic Acid

- Approved by FDA for treatment of ovulatory AUB
- Prevents plasma formation, fibrin degradation, and clot degradation
- In RCT's, more effective than placebo, NSAID, cyclic progestin
- Dose: 1.0-1.3 g every 6-8 hours x 5 days
- Risks: Theoretic risk of VTE – contraindicated in history of or risk factors for VTE – not with CHC
- Side effects: Minimal

Surgical Treatments

- D&C, Hysteroscopy:
  - Not really a treatment
  - Temporary reduction in bleeding
  - Curative if fibroid or polyp removed



- Endometrial Ablation
  - Reduces but doesn't eliminate menses
  - ~25% repeat ablation or hysterectomy in 5 years
  - Must rule out cancer first
  - Can't be done in >12 week uteri or for women who want fertility

Perimenopausal/Anovulatory Bleeding: Summary

R/o pregnancy, thyroid dz

↓

EMB if meets criteria

↓

Treat first as if anovulatory bleeding:
- NSAIDs +
- Hormones (Levo IUD, CHC, DMPA)

↓

If persists:
- U/S to check for anatomic causes (and EMB if not already done)
- Discuss surgical options for bleeding refractory to medical management.

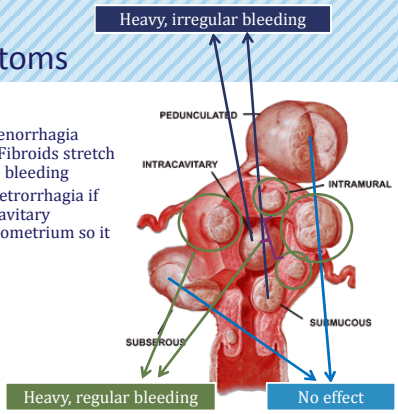
Case 2: Is it the fibroids?

Same history as Case 1 except she has fibroids….On examination her uterus is 16 weeks' size

- Very common→ 80% of hysterectomy specimens (done for any reason) and ~75% have on U/S at age 50
- About 50% are asymptomatic
- Grow slowly until menopause and then decrease by ~50% (can still cause bleeding post-menopause)

Fibroid Symptoms

- Bleeding
  - Usually normal or menorrhagia (heavy but regular). Fibroids stretch endometrium= more bleeding
  - Occasionally menometrorrhagia if submucous or intracavitary (Fibroids distort endometrium so it can't be stable)
- Pressure (not pain)
- Dysmenorrhea



Is the bleeding due to the fibroids?

- Fibroids are common in later 40s
- Anovulation is common in later 40s
- The increased bleeding seen typically due to increased volume or distortion of the endometrium
- Therefore: Thin the endometrium by treating as anovulatory bleeding.

Treatment of AUB and Fibroids

- LNG-IUD: approved by FDA for women with fibroids unless distorted uterine cavity
- Combined hormonal contraception
- NSAIDS
- Tranexamic acid
- GnRH agonist to shrink fibroids before surgery, or bridge to menopause
- (SPRMS – investigational)

AUB with Known Fibroids: Work-up and Treatment

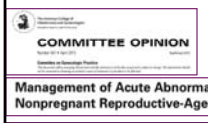
- R/o cancer (using "rational emb algorithm") and pregnancy (don't blame fibroids for the bleeding)
- NSAID's and LNG IUD, CHC, tranexamic acid
- If no better, blame the fibroids! (LNG IUD>CHC)
- +/- Lupron--as a bridge to menopause or pre-op to shrink to obtain less invasive route of hysterectomy
- Other tx (hysteroscopic resection if <3 cm, myomectomy, MR-guided focused u/s, RFA, UAE, hysterectomy)

Case 3: Acute Hemorrhage

41 year old woman presents with dizziness and heavy vaginal bleeding for 2 weeks straight.

Prior to this, occasional irregular periods but nothing like this!

Hemoglobin=9



Management of Acute Abnormal Uterine Bleeding in Nonpregnant Reproductive-Aged Women

Acute AUB Treatment

ABC's and Stop the bleeding!

- Consider ED for transfusion
- Medical management
  - Estrogen – Rapid endometrial growth, vasospasm of arteries, platelet aggregation, increasing clotting supportive factors
    - CEE 25 mg IV q 4-6 hours for 24 hours, followed by progestin or COC for 10-14 days
    - COC: 1 tab TID x 7 days then taper
  - Progestin: medroxyprogesterone acetate 20mg TID x 7 days
  - Tranexamic acid 1.3 g TID x 5 days
- Other options: D&C, foley bulb tamponade, emergency hysterectomy

COC Taper

- Don't want to give 2-4 COC's per day and then stop suddenly b/c will have large withdrawal bleed
- Taper: 3 x 4 days, 2 x 4 days then 1 per day for 1-2 months (60+ pills required).
- Instruct not to take placebos and give at least 3 packs of pills at once.
- Give with anti-emetic, split bid (i.e. 2 bid rather than 4 all at once)

Case 4: Because of her contraceptive…

- A 32 year-old woman has recently initiated the birth control pill.
- She has had spotting for 30 straight days! She is annoyed.

UCSF innovating education in reproductive health

Case 4: Because of the injection…

- A 32 year-old woman has recently initiated the contraceptive injection.
- She has had spotting for 30 straight days! She is annoyed.

UCSF innovating education in reproductive health

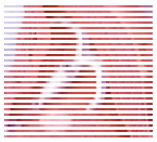
Case 4: Because of the implant…

- A 32 year-old woman has recently initiated the contraceptive implant.
- She has had spotting for 30 straight days! She is annoyed.

UCSF innovating education in reproductive health

Case 4: Because of the IUD…

- A 32 year-old woman has recently initiated the levonorgestrel IUD.
- She has had spotting for 30 straight days! She is annoyed.

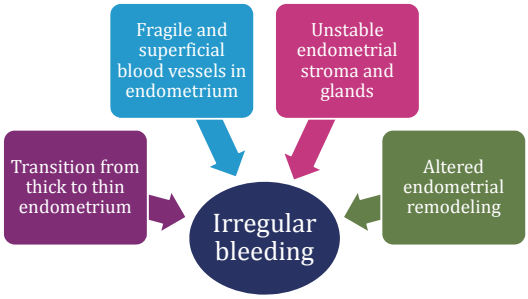


UCSF innovating education in reproductive health

Reasons for dissatisfaction leading to contraceptive discontinuation

	Condom	Pill	Injection	LNG implant
	n=705	*n*=1637	*n*=579	*n*=66
	% Reporting the following reasons			
Too expensive	2.2	3.2	2.1	1
Too difficult or messy to use	15.2	5.7	1.2	10.4
Partner unsatisfied	38.6	2.8	2.6	1.2
Experienced side effects	17.9	64.6	72.3	70.6
Worried about side effects	2	13.1	4.2	4.2
Did not like the changes in menstrual periods	1.5	12.7	33.7	19.3
Experienced contraceptive failure	7.5	10.4	5.7	8.3
Worried about effectiveness	13.2	3	2.2	0
No protection against STIs	1.1	2.1	1.3	0
Other health problems/doctor's advice	2.5	8.5	5.7	9.2
Method decreased sexual pleasure	37.9	4.1	8.2	1.1
Too difficult to obtain	1.5	1.8	2	0
Other reason	15.4	10.6	8.1	10.2

Mechanism for Abnormal Bleeding with Hormonal Contraceptives



COCs: Setting Expectations

- Unscheduled bleeding
  - 10-30% in the first month
  - Less than 10% by the third month
- Amenorrhea
  - Less than 2% in the first year
  - Up to 5% after 1 year

COCs: General Counseling

- Take pill at the same time each day
  - Inconsistent pill use associated with increased risk of unscheduled bleeding[1]
- Stop smoking!
  - Smokers more likely to experience unscheduled bleeding/spotting[1]
  - Among smokers, bleeding more likely to persist

COCs: Regimens

Cyclic Use

Extended Cycle

Treating Bleeding on Cyclic COCs

- Supplemental estrogen[1]
  - Oral CEE 1.25mg x 7 days
  - Oral estradiol 2mg x 7 days
- Double or triple birth control
- Switch to vaginal ring

1. Speroff L & Darney PD, Clinical Guide for Contraception 4th Ed, 2011.
2. Gallo MF, Cochrane, 2013.

Treating Bleeding on Extended COCs

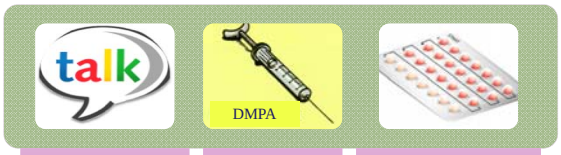
- Discontinue the COCs for 3-4 consecutive days[1]
  - A 3-day hormone free interval was associated with greater resolution in breakthrough bleeding/spotting in comparison to continuing active pills[2]
  - After the first 21 days

DMPA: Setting Expectations

- Abnormal bleeding is common in the first year
- Rates of unscheduled bleeding[1]
  - Up to 70% in the first year
  - Approximately 10% after the first year
- Amenorrhea is more likely over time[1]

	Within 3 months	After 1 year	At 5 years
Rate of amenorrhea	12%	46%	80%

Summary: Injection Bleeding



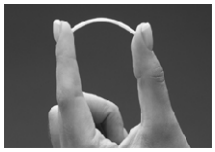
Enhanced Counseling
- Bleeding patterns
- Reassurance

Continue DMPA
- More injections, less bleeding

TREAT
- NSAIDs x 5-7 days
- Estrogen (COCs or supplemental estrogen x 10-20 d)
- Tranexamic acid

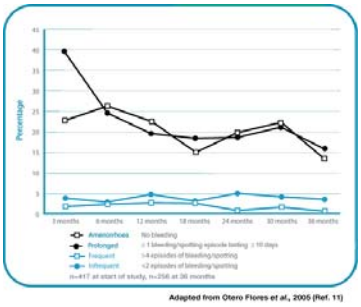
Etonogestrel Implant: Setting Expectations

- Most women experience a reduction of menstrual bleeding[1]
- Bothersome bleeding reported in 25% of patients[2]
  - 6.7% reported frequent bleeding
  - 17.7% prolonged bleeding
- Rates of amenorrhea[3]
  - Approximately 20% in first year
  - 30-40% after 1 year



1. Mansour D, Contraception, 2011. 2. Mansour D, Eur J Contracept Reprod Health Care, 2008 3. Speroff L & Darney PD, Clinical Guide for Contraception 4th Ed, 2011.

Contraceptive Implant: Bleeding Patterns



Adapted from Otero Flores et al., 2005 (Ref. 11)

- Number of unscheduled bleeding days:
  - Is HIGHEST in the first 3 months
  - DECREASES over the first year
  - PLATEAUS in the second and third year

1. Flores JB, Int J Gynaecol Obstet, 2005.

Contraceptive Implant: Bleeding Patterns

- More unpredictable bleeding pattern[1]
  - Amenorrhea may not be sustained if achieved
  - "Favorable" pattern in the first 3 months predicts a continued favorable pattern
  - For those with an "unfavorable" bleeding pattern, 50% report improvement over time

1. Mansour D, Eur J Contracept Reprod Health Care, 2008.

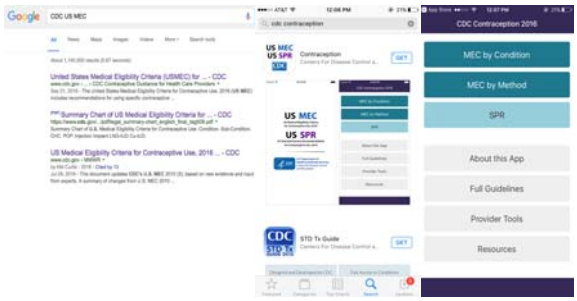
Treating Implant Bleeding

US Selected Practice Recommendation for Contraceptive Use, 2013

EXPECTANT MANAGEMENT for 6-12 months

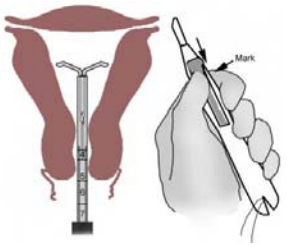
- Supplemental estrogen
  - COCs 10-20 days
  - Oral estrogen - 1.25mg CEE 2mg estradiol
  - Transdermal estrogen 0.1mg/day
- NSAIDs x 5-7 days

Where do you find the US MEC and SPR?



LNG-IUS: Setting Expectations

- Unscheduled spotting or light bleeding is common, especially during the first 3–6 months
- For LNG 52/5, spotting was present in 25% of the users at 6 months and decreased over time.[1]



1. Hidalgo M, Contraception, 2002.

IUD Comparison

NAME	HORMONE	DOSE	APPROVED FOR	
	N/A, uses copper	N/A	10/12 years*	
	levonorgestrel	20 mcg/day (52 mg total in the device)	5/7 years*	"52/5"
	levonorgestrel	18.6 mcg/day (52 mg total)	4/5 years	"52/4"
	levonorgestrel	17.5 mcg/day (19.5 mg total)	5 years	"19.5/5"
	levonorgestrel	14 mcg/day (13.5 mg total)	3 years	"13.5/3"

Bedsider.org

LNG-IUS: Setting Expectations

- LNG 52/5 and LNG 52/4
  - 79-97% reduction in bleeding
  - 33% oligo/amenorrhea in first 3 months, 70% 2 years
  - Amenorrhea at 1 yr: 20%
  - Amenorrhea at 3 yrs: 40%
- LNG 19.5/5
  - Amenorrhea at 1 yr: 12%
  - Amenorrhea at 3 yrs: 20%
- LNG13.5/3
  - Amenorrhea at 1 yr: 6%
  - Amenorrhea at 3 yrs: 12%

UCSF innovating education in reproductive health

Treating LNG IUD Bleeding

- Pre-insertion counseling
  - Discuss bleeding/spotting in first 3-6 months
  - Discuss amenorrhea
- Provide reassurance as bleeding likely to improve
- Check IUD location
- NSAIDs ATC q 4 wks may help, no evidence for estrogen

UCSF innovating education in reproductive health

Irregular Bleeding by Contraceptive

Rates of irregular bleeding	
COCs	• 10-30% in first month of use • <10% by the third month of use
Vaginal Ring	• Less common in comparison to COCs • Up to 6% in first year
Patch	• Similar to COCs except slightly higher rate of spotting in first 2 cycles
Injectable	• 70% in first year • 10% after the first year
Implant	• Up to 25% in first 2 years
Cu-IUD	• Less irregular bleeding compared to LNG-IUS
LNG-IUS	• Up to 25% at 6 months • 8-11% at 18-24 months

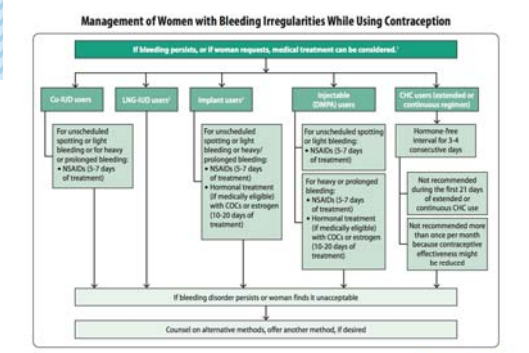
UCSF innovating education in reproductive health

Amenorrhea by Contraceptive

RATES OF AMENORRHEA

	Within 1st year	At 1 year	Beyond
COCs	<2%	Up to 5%	
Vaginal Ring	Similar to COCs		
Patch	Similar to COCs		
Injectable	12%	46%	80% at 5 years
Implant	21%	30-40%	
Cu-IUD	0%	0%	0%
LNG-52/5 & 4		20%	40% at 3 years
LNG-19.5/5		12%	20% at 3 years
LNG-13.5/3		6%	12% at 3 years

UCSF innovating education in reproductive health



US Selected Practice Recommendation for Contraceptive Use, 2016

Case : Early Pregnancy

- A 35 year-old woman at 8 weeks' gestation presents to your office with spotting.

Evaluation

- History
  - Risk factors for ectopic pregnancy
- Physical exam
  - Vital signs
  - Abdominal and pelvic exam
- Ultrasound
  - Transvaginal often necessary
- Lab
  - Rh factor
  - Hemoglobin or Hematocrit
  - β-hCG when indicated

Is the pregnancy desired?

Case 5: Bleeding in Early Pregnancy

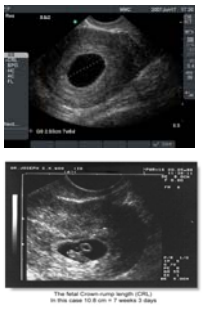
- Keep the patient informed.
  - Provide reassurance that not all vaginal bleeding & cramping = an abnormality, but avoid guarantees that "everything will be all right"
  - Assure that you are available
- What does the bleeding mean?
  - Up to 20% chance of ectopic pregnancy
  - 50% ongoing pregnancy with closed cervical os
  - 85% ongoing pregnancy with viable IUP on sono
  - 30% of normal pregnancies have vaginal bleeding

Ectopic Pregnancy

- 1-2% of all pregnancies
- Up to 20% of symptomatic pregnancies
- ½ of ectopic patients have no risk factors
- Mortality has declined: 0.5/100,000
  - 6% of pregnancy-related deaths
- Early diagnosis important
- Concern about management errors

Early Pregnancy Loss (EPL)

- 15-20% of clinically recognized pregnancies
- 1 in 4 women will experience EPL
- Includes all non-viable pregnancies in first trimester = miscarriage



Pregnancy of Unknown Location

- When the pregnancy test is positive and no signs of intrauterine or extrauterine pregnancy on u/s
  - We try to follow these women until a diagnosis is made
  - We have to weigh risk of ectopic pregnancy (EP)
  - Sometimes no final diagnosis - both EPL and EP may resolve spontaneously
- More commonly encountered in symptomatic early pregnancy, but can also be encountered in asymptomatic women, especially when u/s early

Simplified Workup of Bleeding &/or Pain

1. Where is the pregnancy? → U/S (same day)
2. If the pregnancy undesired? → uterine aspiration
3. If desired and we can't tell where it is: Is it normal or abnormal? → quantitative (serial) Beta-HCG
   - If Bhcg above threshold (>3,000) and no IUP = **Abnormal**
   - **Most likely an abnormal IUP**

Simplified Workup of Bleeding &/or Pain

1. Where is the pregnancy? → U/S (same day)
2. If the pregnancy undesired? → uterine aspiration
3. If desired and we can't tell where it is: Is it normal or abnormal? → quantitative (serial) Beta-HCG
   - If Bhcg above threshold (>3,000) and no IUP = **Abnormal**
   - Serial beta HCGs:
     - If Bhcg drops > 50% in 48 hours = Abnormal
     - If Bhcg rises > 50% in 48 hours = Most likely normal (can be EP) – Continue to follow and repeat u/s
     - If between = Most likely abnormal (still can be normal) – Continue to follow and repeat u/s
4. **If pregnancy clearly abnormal, if undesired or desires definitive dx → uterine aspiration**

IUP=Intrauterine pregnancy

Conclusions

- Diagnosis: think of pregnancy, then anovulation
- Work-up: Always rule out pregnancy. If irregular: TSH, PLN. ?HCT, ?EMB, TVUS if initial tx fails.
- Treatment: all bleeding treated similarly
  - NSAID's plus hormones. Persistent abnormal bleeding requires continued work-up even if EMB and/or ultrasound are negative.
- Hormonal or copper birth control: set expectations

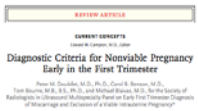
Thanks to Rebecca Jackson and Sara Whetstone for sharing slides!

Society of Radiologists in Ultrasound: No Gestational Sac

- HCG 2000 - 3000
  - Non-viable pregnancy most likely, 2X ectopic
  - Ectopic is 19 x more likely than viable pregnancy
  - For each viable pregnancy:
    - 19 ectopic pregnancies
    - 38 nonviable pregnancies
  - 2% chance of viable pregnancy
- HCG > 3000
  - Ectopic 70 x more likely than viable pregnancy

  0.5% chance viable IUP

In women with desired pregnancy consider beta hcg cut-off of >= 3000.



REVIEW ARTICLE

CURRENT CONCEPTS

Diagnostic Criteria for Nonviable Pregnancy Early in the First Trimester

Slides for Reference Only