Abnormal Uterine Bleeding (AUB)

This practice algorithm has been specifically developed for MD Anderson using a multidisciplinary approach and taking into consideration circumstances particular to MD Anderson, including the following: MD Anderson’s specific patient population; MD Anderson’s services and structure; and MD Anderson’s clinical information. Moreover, this algorithm is not intended to replace the independent medical or professional judgment of physicians or other health care providers. This algorithm should not be used to treat pregnant women.

Note: This algorithm is intended for use in hematologic malignancies.

**PRESENTATION**

- Premenopausal females undergoing intensive chemotherapy or stem cell transplant. Consult General Gynecology for post-menopausal women.

**TREATMENT**

1. **On admission**
   - Give leuprolide 11.25 mg IM and continue patient on monophasic continuous OCP (skip placebo pills) for one month.
   - Consider restarting OCP with taper if bleeding occurs.

2. **Management of uterine bleeding**
   - If bleeding persists, perform all of the following:
     - Start OCP taper 3 - three times a day for 3 days
     - Give leuprolide 11.25 mg IM
     - Platelet transfusion if platelets less than 20-30 K/microliter
     - Assess patient for bleeding after 24-48 hours

3. **Consult General Gynecology**
   - Transfusion if platelet level less than 20-30 K/microliter
   - Continue OCP taper (twice a day for 3 days; then one pill daily)
   - Primary team to manage cancer and monitor for bleeding

**Contraindications to OCP**:
- History of breast cancer
- High risk of arterial or venous thrombosis (e.g., active or history of DVT/PE, severe or uncontrolled hypertension, active tobacco use in females greater than 35 years of age, known vascular disease)
- No oral intake

**Prevention of uterine bleeding**
- For IM administration, platelets must be greater than or equal to 50 K/microliter. Transfuse if platelets less than 50 K/microliter.
- May take two weeks for optimal effect
- Continue OCP for 1 month to prevent two-week post-leuprolide withdrawal bleed
- Repeat leuprolide injection in 3 months
- Patients planned for stem cell transplant should receive injection 1 month prior to procedure
- Contraception should be recommended in women of childbearing potential as it is not ensured with leuprolide
- Contraindicated in women who are pregnant or breastfeeding

**Patient on OCP?**

1. Yes
   - Prevention of uterine bleeding

2. No
   - Management of uterine bleeding

3. OCP taper [use any monophasic OCP (See Appendix A)]:
   - PO three times daily for 3 days
   - PO twice daily for 3 days
   - PO daily continuous (skip placebo pills)

4. Contraindications to OCP:
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CONTRAINDICATIONS TO OCP

- History of breast cancer
- High risk of arterial or venous thrombosis
- No oral intake

TREATMENT

1. **Give leuprolide** \(^2\) 11.25 mg IM (do not add OCP)
2. **If bleeding persists, give PO tranexamic acid**

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

- **Give leuprolide** \(^2\) 11.25 mg IM for prevention (do not add OCP)

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

- **Give leuprolide** \(^2\) 11.25 mg IM (do not add OCP)

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

- **Give leuprolide** \(^2\) 11.25 mg IM for prevention (do not add OCP)

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

- **Start intravaginal OCP taper** \(^3\) or **Apply estrogen/progesterone transdermal patch and**
  - **Give leuprolide** \(^2\) 11.25 mg IM

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

- **Await oral intake or**
  - **Insert one OCP intravaginal daily or**
  - **Apply estrogen/progesterone transdermal patch and**
  - **Give leuprolide** \(^2\) 11.25 mg IM

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

- **Consult General Gynecology**
- **Bleeding persists?**
  - Yes
    - **Consult General Gynecology**
  - No

1. See Appendix A - Dosing Recommendations
2. Leuprolide IM administration:
   - For IM administration, platelets must be greater than or equal to 50 K/microliter. Transfuse if platelets less than 50 K/microliter.
   - Repeat leuprolide injection in 3 months
   - May take two weeks for optimal effect
   - Patients planned for stem cell transplant should receive injection 1 month prior to procedure
   - Contraception should be recommended in women of childbearing potential as it is not ensured with leuprolide
   - Contraindicated in women who are pregnant or breastfeeding
3. OCP taper [use any monophasic OCP (See Appendix A)]:
   - Intravaginal three times daily for 3 days
   - Intravaginal twice daily for 3 days
   - Intravaginal daily continuous (skip placebo pills)
## APPENDIX A: Dosing Recommendations

<table>
<thead>
<tr>
<th>Product</th>
<th>Dosage Form</th>
<th>Strength</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contraceptives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethinyl estradiol/norgestrel (Lo/Ovral®, Cryselle®)</td>
<td>Tablet</td>
<td>0.03 mg/0.3 mg</td>
<td>• Monophasic OCP • PO or intravaginal (skip placebo pills)</td>
</tr>
<tr>
<td>Ethinyl estradiol/desogestrel (Desogen®, Ortho-Cept®)</td>
<td>Tablet</td>
<td>0.03 mg/0.15 mg</td>
<td>• Monophasic OCP • PO or intravaginal (skip placebo pills)</td>
</tr>
<tr>
<td>Ethinyl estradiol/norethindrone (Ortho-Novum® 1/35)</td>
<td>Tablet</td>
<td>0.035 mg/1 mg</td>
<td>• Monophasic OCP • PO or intravaginal (skip placebo pills)</td>
</tr>
<tr>
<td>Ethinyl estradiol/levonorgestrel (Seasonique®) 90-day pack</td>
<td>Tablet</td>
<td>0.03 mg/0.15 mg</td>
<td>• Monophasic OCP • Consider prescribing at discharge for continuous OCP</td>
</tr>
<tr>
<td>Ethinyl estradiol/norelgestromin (Xulane® Patch)</td>
<td>Patch</td>
<td>35 mcg/150 mcg per day</td>
<td>Apply one patch each week. Skip patch-free week if using to prevent vaginal bleeding.</td>
</tr>
<tr>
<td>Medroxyprogesterone acetate (Depo-Provera®)</td>
<td>IM injection</td>
<td>150 mg</td>
<td>• For IM administration, platelets must be greater than or equal to 50 K/microliter. Transfuse if platelets less than 50 K/microliter. • Every 3 months</td>
</tr>
<tr>
<td><strong>Other Hormonal Agents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estrogens, conjugated, equine (Premarin®)</td>
<td>IV injection</td>
<td>25 mg/5 mL</td>
<td>25 mg IV every 6 hours for 24 hours</td>
</tr>
<tr>
<td>Medroxyprogesterone acetate (Provera®)</td>
<td>Tablet</td>
<td>2.5 mg 10 mg</td>
<td>10 mg PO every 1-2 hours to total (60-120 mg), then 10 mg PO three times a day</td>
</tr>
<tr>
<td>Megestrol acetate (Megace®)</td>
<td>Tablet</td>
<td>20 mg</td>
<td>1-2 tablets PO daily</td>
</tr>
<tr>
<td>Norethindrone acetate (Aygestin®)</td>
<td>Tablet</td>
<td>5 mg</td>
<td>• 5 mg daily for light bleeding or • 5 mg three times a day for heavy bleeding</td>
</tr>
<tr>
<td>Progesterone (Prometrium®)</td>
<td>Capsule</td>
<td>100 mg</td>
<td>1-2 capsules PO daily</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leuprolide acetate (Lupron® Depot)</td>
<td>IM injection</td>
<td>11.25 mg</td>
<td>• Contraindicated in women who are pregnant or breastfeeding • For IM administration, platelets must be greater than or equal to 50 K/microliter. Transfuse if platelets less than 50 K/microliter. • If greater than two injections, add OCP to prevent bone loss, if not contraindicated. • Continue OCP for 1 month after first dose • Repeat every 3 months • Use may preserve fertility</td>
</tr>
<tr>
<td>Tranexamic acid (Lysteda™)</td>
<td>Tablet</td>
<td>650 mg</td>
<td>• 2 tablets PO three times a day for 5 days • Lysteda™ is not currently on the MD Anderson formulary</td>
</tr>
<tr>
<td>Aminocaproic acid (Amicar®)</td>
<td>IV injection</td>
<td>250 mg/mL 500 mg 25% (250 mg/mL)</td>
<td>0.5-1.0 g/hour IV infusion • 1-2 g PO every 2-3 hours • 1-2 g (4-8 mL) PO every 2-3 hours • Consult Benign Hematology</td>
</tr>
</tbody>
</table>
### APPENDIX B: General Gynecology Options

<table>
<thead>
<tr>
<th>Medical options:</th>
<th>Surgical options:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(See Appendix A for Dosing Recommendations)</td>
<td></td>
</tr>
<tr>
<td>• Estrogen short-term for severe bleeding in breast cancer</td>
<td>• Dilation and curettage (D&amp;C)</td>
</tr>
<tr>
<td>• IV estrogen for severe bleeding</td>
<td>• Endometrial ablation (hysterectomy if ablation unsuccessful and blood indices stabilized)</td>
</tr>
<tr>
<td>• Medroxyprogesterone acetate or other hormonal options</td>
<td>• Balloon tamponade</td>
</tr>
<tr>
<td>• Leuprolide – may preserve fertility</td>
<td>• Uterine artery embolization (UAE)</td>
</tr>
<tr>
<td>• Aminocaproic acid, consult Benign Hematology</td>
<td></td>
</tr>
<tr>
<td>• Consider thromboelastogram (TEG) for diagnosis of coagulation abnormalities</td>
<td></td>
</tr>
</tbody>
</table>
SUGGESTED READINGS


Committee opinion no. 606: options for prevention and management of heavy menstrual bleeding in adolescent patients undergoing cancer treatment. (2014). Obstetrics & Gynecology, 124(2, PART 1), 397-402. doi:10.1097/01.aog.0000452745.44206.c3


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- Alessandra Ferrajoli, MD
- Deborah McCue, PharmD, RPh
- Andrea Milbourne, MD
- Denise Nebgen, MD, PhD
- Cristina Perez
- Gloria Trowbridge, MSN, RN
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DEVELOPMENT CREDITS

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