



Tranexamic acid and Fe deficiency.

- How much blood per period
- Use of Tranexamic acid in Menorrhagia
- All you want to know about iron
- Assessing iron status
- How to treat Fe deficiency




What is the average blood lost per normal menstrual period ?

- A 40 cc
 - B 80 cc
 - C 120 cc
 - D 200 cc
 - E 300 cc
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ANSWER

20-50 cc



How do you know how much bleeding occurs ?

- A Length of period ?
 - B Cramps ?
 - C Clots ?
 - D Number of pads or tampons ?
 - E Stay at home ?
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ANSWER

Anything > 15 is on heavy side



Menorrhagia

- Blood loss of greater than 80 cc
 - Common - 35%
 - Treatment
 - Decreasing bleeding
 - Hormonal
 - Danazol
 - Tranexamic acid
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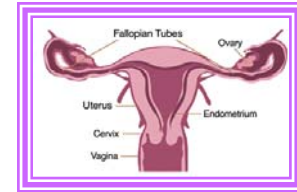
Tranexamic Acid

Mechanism of Action

- Tranexamic acid inhibits conversion of plasminogen to plasmin, hence prevents breakdown of clot.
- Increases collagen synthesis which preserves the fibrin matrix and increases the tensile strength of the clot
- These actions of Tranexamic acid help in stabilizing the clot

Tranexamic Acid

Uses in OBGYN



To Prevent / reduce blood loss in: -

- Dysfunctional Uterine Bleeding
- IUD Menorrhagia.
- Conization / Amputation of Cervix.
- Post Partum Hemorrhage.
- Ante Partum Hemorrhage.
- During/After Abdominal/Vaginal Surgery

Available in both Oral and Inj. (IV) forms

Evidence for tranexamic acid

Tranexamic acid treatment for heavy menstrual bleeding: a randomized controlled trial. *Obstet Gynecol* 2010 Oct;116(4):865-75 (ISSN: 1873-233X) Lukes AS; Moore KA; Muse KN; Gersten JK; Hecht BR; Edlund M; Richter HE; Eder SE; Attia GR; Patrick DL; Rubin A; Shangold GA
Carolina Women's Research and Wellness Center, Durham, North Carolina 27713, USA. andrealukes@cwrrwc.com. OBJECTIVE: To assess the efficacy and safety of an oral formulation of **tranexamic acid** for the treatment of heavy menstrual bleeding. METHODS: Adult women with heavy menstrual bleeding (mean menstrual blood loss 80 mL or more per cycle) were enrolled in a double-blind, placebo-controlled study. After two pretreatment menstrual cycles, women were randomized to receive **tranexamic acid** 3.9 g/d or placebo for up to 5 days per menstrual cycle through six cycles. To meet the prespecified three-component primary efficacy end point, mean reduction in menstrual blood loss from baseline with **tranexamic acid** treatment needed to be 1) significantly greater than placebo, 2) greater than 50 mL, and 3) greater than a predetermined meaningful threshold (36 mL or higher). Health-related quality of life was measured using a validated patient-reported outcome instrument. RESULTS: Women who received **tranexamic acid** (n=115) met all three primary efficacy end points: first, a significantly greater reduction in menstrual blood loss of -69.6 mL (40.4%) compared with -12.6 mL (8.2%) in the 72 women who received placebo (P <.001); reduction of menstrual blood loss exceeding a prespecified 50 mL; and last, reduction of menstrual blood loss considered meaningful to women. Compared with women receiving placebo, women treated with **tranexamic acid** experienced significant improvements in limitations in social or leisure and physical activities, work inside and outside the home, and self-perceived menstrual blood loss (P <.01). The majority of adverse events were mild to moderate in severity, and the incidence of gastrointestinal adverse events was comparable with placebo. CONCLUSION: In this study, a new oral **tranexamic acid** treatment was well tolerated and significantly improved both menstrual blood loss and health-related quality of life in women with heavy menstrual bleeding. CLINICAL TRIAL REGISTRATION: ClinicalTrials.gov, www.clinicaltrials.gov, NCT00386308. LEVEL OF EVIDENCE: I.

Perceived less bleeding

Improvement to less bleeding

Improvement in quality of life and leisure

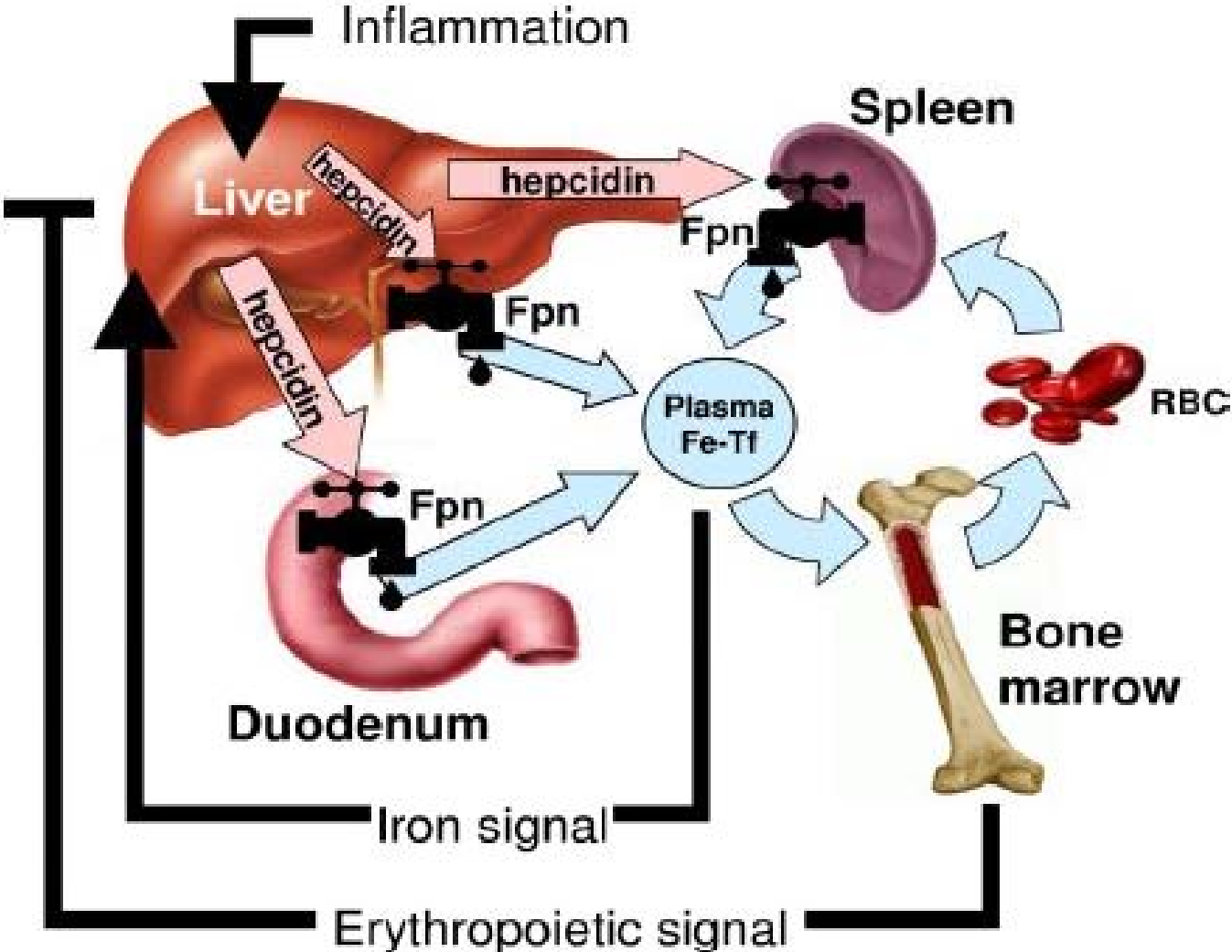
Tranexamic acid

- 500 mg tablets
 - Dose 1 gm TID for 5 days
 - Side effects - nausea
 - Cost \$54
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- 5% mouth rinse 300 cc \$59



Everything you want to know about Iron

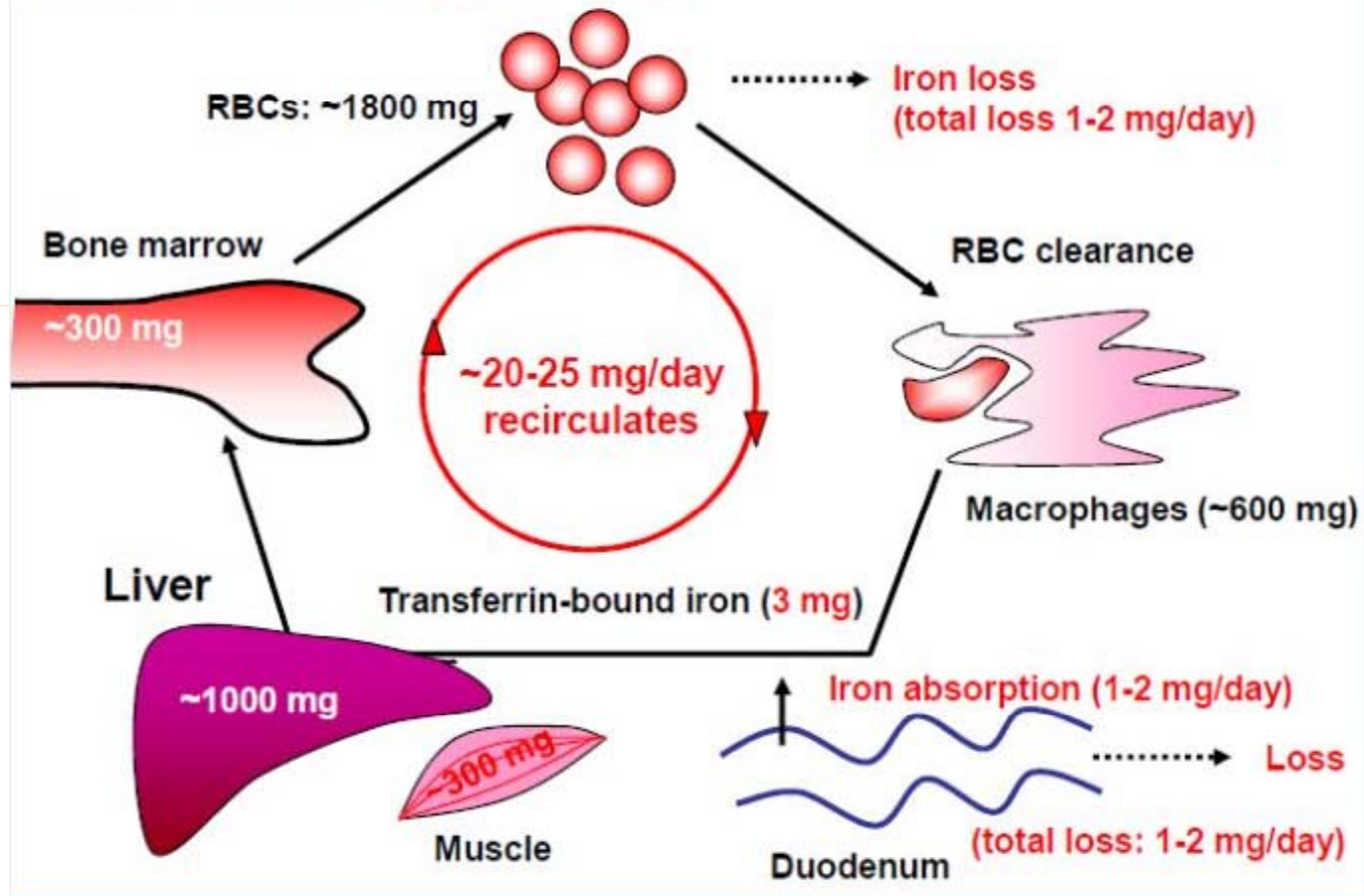
IRON METABOLISM



Some facts

- Red cells are red because they contain Hgb
- Hgb contains iron
- Production – 2-3 million rbc's per second
- 6 cc/day - Each cc contains $\frac{1}{2}$ mg Fe
- 25-30 mg/day fe required for rbc synthesis
- Body iron 3-4 gms
- Tissue metabolic pool 1/1000
- A lot of iron going in and out

How much iron recycles daily?





Iron

- Transition metal
- Essential role by its ability to accept and donate electrons

- Participates in:
 - Oxygen transport
 - Mitochondrial oxidative energy production
 - Inactivation of drugs and toxins
 - DNA synthesis
- One of the most abundant elements in universe



Iron

- Low solubility of its stable oxidized form
- Iron deficiency paradoxically one of the most common nutritional problems
- Fe deficiency affects 20% of human race
- Fe deficiency impairs work capacity, mental sharpness
- Fe overload can cause major organ dysfunction

Menses and iron

- Menses 50 cc 25mg Fe
- Obligatory loss 1-2 mg/day
- Absorption up to 2 mg/day
- Loss 55mg/month
- Absorption 60mg/month
- Result slight gain in Fe
- If 80 cc there is clear loss of Fe



Iron studies

- Serum Iron
 - TIBC – total iron binding capacity
 - Iron saturation
 - Serum ferritin
 - Transferrin
 - Bone marrow iron
 - Gene studies
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Ferritin


- Rate of synthesis related to fe pool
- Secreted by RES cells
- Levels
 - If < 10 no fe stores
 - If > 15 probably fe stores
- In inflammation ferritin level rises
- **Rule** for every fall of 10G/L ferritin up by 20-30

Sequence of becoming Fe deficient

- First exhaust Fe stores (ferritin)
- Fe Depleted (no anemia)
- Serum Fe drops TIBC goes up
- Fe deficient (symptoms ?)
- Then Anemia develops
- Then microcytosis
- Then Hypochromia
- With new machines new parameters coming (Retic Hgb)

Iron status and blood donation

- Total body iron 3 – 4 gms
- Men 4 gms
- Women 3 gms
- Stores
- Men 1200 mg
- Women 700 mg
- 1 unit of blood = 250 gms Fe



How often can each give before becoming Fe deficient.

- Men
- A 2 times
- B 3 times
- C 4 times
- Women
- A once
- B 2 times
- C 3 times

Iron replacement

- Ferrous gluconate 30 mg elemental
 - Ferrous sulphate 60 elemental
 - Ferrous fumarate 100 elemental

 - Proferrin 12 elemental
 - Slow Fe 160 mg
 - Fer in sol 150 mg/ml
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- What is tolerance level
 - Which product to give



How quickly to respond and how long ?

- Hgb response approximately 8g/L/week
- Start once a day for 1 week and then 2 or 3 per day
- Use one product only
- How long ?
- If Menorrhagia persists keep on
- First Hgb normalizes
- Then stores will take months

Parenteral iron

- Jectofer iron sorbital (IM use)
- Iron dextran - can give TDI
- Venofer - iron sucrose
- New products faster infusion.
- Well established in renal failure and dialysis
- Some use in ACD
- When to give ??



Conclusion

- Menorrhagia is common
 - Iron metabolism is complex and interesting
 - Assessing Fe status not complex
 - Know preparations and response
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QUESTIONS