<table>
<thead>
<tr>
<th>Age Group</th>
<th>Usual Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Premenarchal</strong></td>
<td>Foreign body, Trauma, including sexual abuse, Infection, Urethral prolapse, Ovarian tumor, Precocious puberty</td>
</tr>
<tr>
<td><strong>Reproductive years</strong></td>
<td>Anovulation, Pregnancy, Cancer, Polyps, fibroids, adenomyosis, Infection, Endocrine dysfunction (PCOS, thyroid, pituitary adenoma), Bleeding diathesis, Medication related (eg, contraceptive agents)</td>
</tr>
<tr>
<td><strong>Early postmenarche</strong></td>
<td>Anovulation (hypothalamic immaturity), Bleeding diathesis, Stress (psychogenic, exercise induced)</td>
</tr>
<tr>
<td><strong>Perimenopausal</strong></td>
<td>Anovulation, Polyps, fibroids, adenomyosis, Cancer</td>
</tr>
<tr>
<td><strong>Menopause</strong></td>
<td>Atrophy, Cancer, Estrogen replacement therapy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Most common age group</th>
<th>Clinical hallmarks</th>
<th>Laboratory determinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding disorders</td>
<td>Adolescents</td>
<td>History of easy bruising or bleeding</td>
<td>• Complete blood count with platelets&lt;br&gt;• Prothrombin time, partial prothrombin time, bleeding time&lt;br&gt;• von Willebrand factor</td>
</tr>
<tr>
<td>Uterine abnormalities (fibroids, polyps)</td>
<td>&gt;40 years</td>
<td>Pelvic mass on bimanual exam or ultrasound</td>
<td>Pelvic ultrasonography; sonohysterography</td>
</tr>
<tr>
<td>Perimenopause</td>
<td>&gt;40 years</td>
<td>Vasomotor and mood changes</td>
<td>• Serum follicle-stimulating hormone (if indicated)&lt;br&gt;• Endometrial biopsy to rule out carcinoma</td>
</tr>
<tr>
<td>Thyroid disorders</td>
<td>&gt;50 years</td>
<td>• Weight and appetite changes&lt;br&gt;• Heat and cold intolerance</td>
<td>Thyroid-stimulating hormone</td>
</tr>
<tr>
<td>Pregnancy and pregnancy loss</td>
<td>Sexually active, childbearing years</td>
<td>Sudden onset</td>
<td>Urine human chorionic gonadotropin</td>
</tr>
<tr>
<td>Cervical infection or trauma</td>
<td>All sexually active years, especially age &lt;25</td>
<td>Abnormal discharge, dyspareunia, multiple sexual partners</td>
<td>• Gonorrhea and chlamydia cultures&lt;br&gt;• Wet smear</td>
</tr>
</tbody>
</table>
Menorrhagia in general practice - disease or illness

majority of women who complain of heavy bleeding do not fit the medical definition

Women attached particular importance to
 - how they felt
 - to their ability to function
 - they rejected the medical emphasis on blood loss evaluation.

Many women were dissatisfied with the consultation
 - experienced doctors as being dismissive of their problem
 - were seeking an explanation for why their periods had changed
 - had concerns that related to their understanding of menstrual bleeding.
2 years (1996-98) of “menorrhagia” referrals to Edinburgh and Glasgow Royal Infirmaries, and at Glasgow Western Infirmary

1506 suitable referrals

Potential 952 participants

226 women who collected their used sanitary protection (=26% of the 865 women who were eligible for collection)

Measurement of loss requires the collection of used sanitary protection for 1 period

Case note review 8 months after the initial appointment
How feasible it is to judge menorrhagia from clinical history?
Is it feasible to judge menorrhagia from clinical history? – YES!

- The volume of blood loss is associated more closely than has been believed with subjective judgment of heaviness and is even more strongly associated with specific clinical features.

- Clinical features that are associated most strongly with blood loss volume:
  - Required rate of changing sanitary protection during full flow
  - Total number of products used
  - Poor iron status
  - Size of clots
  - Need to change protection during the night
Questions to ask to help quantify blood loss during menses

How often do you change your sanitary pad/tampon during peak flow days?

How many pads/tampons do you use over a single menstrual period?

Do you need to change the pad/tampon during the night?

How large are any clots that are passed?

Has a medical provider told you that you are anemic?

Women with a normal volume of menstrual blood loss tend to:

- change pads/tampons at $\geq 3$ hour intervals,
- use fewer than 21 pads/tampons per cycle,
- seldom need to change the pad/tampon during the night,
- have clots less than 1 inch in diameter,
- not be anemic

Representation of the physiological cycle

The physiological menstrual and its hormonal profile. Th rows have been drawn in ve thicknesses to correspond 5 different horm- onal concentra during the cycle. The solid arrows represent the activating, the d arrows the inhibiting effects. F Gr, black = FSH, yellow = orange = oestradiol, brown = gesterone, blue = inhibin. uterine mucosa grows very hi the course of the cycle. A li cyst can become nidated or such a mucosa.
Cycle during oral contraception

This is how oral contraceptives work. They prevent ovulation and nidation of the oocyte in the endometrium. Both follicular maturation and ovulation as well as endometrial proliferation and the nidation of a blastocyst arising exceptionally from break-through ovulation are prevented. Double safety is, therefore, ensured. Red = oestrogen component
Blue = progestogen component
Modalities of Therapies

- Short term ↔ Long term
- Hormonal ↔ Non-hormonal
- Contraceptive ↔ Non-contraceptive
- Low efficacy ↔ Highly reliable
- Reversible option ↔ Irreversible method
- Easy opt-in/out ↔ Dr-exclusive opt-out
- Medical ↔ Surgical
- Organ preserving ↔ Hysterectomy
A “MUST”: check for recent smears, or take one
Let the patient achieve the right BALANCE
I AM TRYING TO ACHIEVE A WORK-LIFE BALANCE.
Cyklokapron

Lennart Nilsson and Goran Rybo (Gothenburg, Sweden) Acta obst. et gynec. scandinav. 44, 467, 1965

Fig. 1. Mean daily blood loss for 37 women with menorrhagia.
Mean menstrual blood loss of 27 patients during three pretreatment (control) cycles and three cycles during treatment with pretreatment cycles and three cycles during treatment with mefenamic acid, and 26 patients during three pretreatment cycles and three tranexamic acid.

- **Conclusions**: Tranexamic acid given during menstruation is a safe and highly effective treatment for excessive bleeding. Patients with dysfunctional uterine bleeding should be offered medical treatment with tranexamic acid before a decision is made about surgery.

- John Bonnar and Brian Sheppard, *Trinity College, St James’ Hospital and the Coombe Women’s Hospital, Dublin*

Bonnar J, Sheppard B L BMJ 1996;313:579-582
Tranexamic acid = lysine analogue, competitively inhibits the binding of plasminogen to fibrin

- reduces bleeding by approximately 50%
- days 1 to 4 or 5 of menses
- dose of 4 g/day

- Mean blood loss (94 ml) was reduced (−110 ml)
- However no difference in the women’s perception
  - blood loss
  - days of the menstrual blood loss (bleeding duration)
- [those dose dependent: not less than 4 g!]
Tranexamic Acid

Generally well-tolerated
- Nausea
- Vomiting
- Diarrhea
- Disturbances in color vision have been reported

Non hormonal
Readily available
Easy opt-in/opt-out

Extent of the thrombotic risk remains somewhat uncertain
- Increased risk of VTE
- Infarct type necrosis and thrombosis of leiomyoma x 3

Women with a hx of thrombosis should avoid antifibrinolytic agents

Short-lived effect, qid dosage
## Oestrogen based pills

<table>
<thead>
<tr>
<th>Advantage/Consideration</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabile endometrium</td>
<td>VTE risk increased 3 x</td>
</tr>
<tr>
<td>Suppression of ovarian</td>
<td>- 1:100,000 &lt; 20</td>
</tr>
<tr>
<td>cycle</td>
<td>- 1:10,000 &lt; 40</td>
</tr>
<tr>
<td>Reliable contraception</td>
<td>- 1:1.000 &lt; 75</td>
</tr>
<tr>
<td>Cyclic or continuous</td>
<td>- 1:100 &gt; 75</td>
</tr>
<tr>
<td>Easy opt-in/opt-out</td>
<td>Factor V Leyden, Prothrombin mutation, SLE contraindicated</td>
</tr>
<tr>
<td>Fully funded PHARMAC</td>
<td>Smoker &gt; 35 years</td>
</tr>
<tr>
<td></td>
<td>Higher E₂ for enzyme inducing co-medication</td>
</tr>
<tr>
<td></td>
<td>Compliance issues</td>
</tr>
</tbody>
</table>
Progestins

SYSTEMIC
- Progesterone-only pill
- Depo-Provera
- Implants
  - Implanon
  - Jadelle

TOPICAL
- Mirena
Progesterone-only pill

“Pure” / original form of contraception
Least add-on effects
Thinning of endometrium = decreased blood loss
Thrombophilia safe

Compliance issues (2 hr window)
Breakthrough bleeding not infrequent
\( \downarrow \) Reliability \( \Leftrightarrow \) BMI \( \uparrow \)
Some androgenic effects may be enhanced
Acne
Depression
Depot – Provera

- Readily available
- High acceptance
- Reliable contraception
- Thrombophilia safe
- Minimal drug interactions
- Ovarian suppression

- Breakthrough bleeding fairly frequent initially
- Amenorrhea > 50% after 1 year
- Long half-life time/delayed return of fertility
- Opt-off takes long
- Androgenic effects not rarely enhanced
- Acne
- Depression
- Un-ease about bone density remains
Implants: Jadelle > Implanon

Highest reliability contraceptive
No compliance issues
Jadelle: free contraception
Uterus free of Foreign Body

2 procedures: in & out
Initially high hormone blood levels, "confrontational" side effects
Difficult opt-out
↓ Reliability ⇔ BMI ↑
Mirena

Insertion challenging

4/12 metrorrhagia

Amenorrhea disliked?

PMT unchanged

Spontaneous expulsion (adenomyosis)

Mirena

Lowest systemic hormones of all contraceptives

Minimal effect on cycle

Reliability = Sterilisation

Reversible

Positive effect on dysmenorrhea endometriosis

Foreign body
Hysteroscopy + Curetting

- Low operative risk
- Very short lived benefit
- Soon? – Office procedure
- Does not solve the problem: mainly diagnostic
Rollerball Ablation (historic?)

- Operator controlled
- Possible on irregular surface
- Reliable (learning curve)

- Increased operative risks
  - Perforation
  - Bowel injury
  - Fluid overload
  - Re-epithelialisation: “patchy”
    - global effect
  - Cervical stenosis
Endometrial Ablation

El-Nashar, S; Hopkins, M: Obstet Gynecol. 2009 January; 113(1): 97–106 – 8 years, 800 cases

Balloon (distending) Thermal Ablations

- THERMACHOICE (Thermablate)
- DAYSTAY Procedure
- Irregular cavities
- 84% success; ↑ if ≥ 45 years
- ≤ P 4
- No sterilisation
- No dysmenorrhea (adenomyosis)

High Frequency Ablation ("bi-polar coagulation")

- NOVASURE
- OFFICE PROCEDURE possible
- Increased safety
- High amenorrhea rate
Estimate Amenorrhea 25% - 50%

- 48-year-old woman
- normal-sized uterus (<9 cm)
- thin endometrium (<4 mm)
- NOVASURE

- 35-year-old
- larger uterus (≥9 cm)
- thicker endometrium (≥4 mm)
- Balloon Ablation

71% 6%
Hysterectomy

Immediate result

No treatment failure

Increased operative risks

Increased post-operative risks

Prolonged recovery (six weeks)
NOVASURE Radio Frequency Device
NovaSure™ System
Principle of Operation

- Shallower Destruction in Cornua, Lower Uterine Segment
- Deeper Destruction Mid-Body of the Uterus
The Treatment Goal

- Tapered ablation in Cornu and Internal Os
- Destroy the endometrium
- Destroy the superficial Myometrium
- Spare the cervix
Hysteroscopic Views

Pre-ablation

After 85 second treatment
Novasure 3 year FU


Amenorrhea Success

- Cooper et al.: 98%
- Abbott et al.: 47%
- Gallinat et al.: 97%
- Bongers et al.: 43%
- Busund et al.: 65%
- Fullop et al.: 91%

- Cooper et al.: 87%
- Abbott et al.: 97%
- Gallinat et al.: 57%
- Bongers et al.: 92%
- Busund et al.: 90%
- Fullop et al.: 99%

- Cooper et al.: 47%
- Abbott et al.: 43%
- Gallinat et al.: 58%
- Bongers et al.: 92%
- Busund et al.: 90%
- Fullop et al.: 99%
Satisfaction Novasure : RB
(3-Year Follow-Up)

Patient Satisfaction

Recommendation to a Friend
Hysteroscopic Sterilisation
Direct contact invited

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