Heavy menstrual loss is among the commonest gynaecological problems, and is defined as greater than 80ml of blood loss each period; however, this is rarely measured in clinical practice. The descriptions of the quantity of monthly blood loss is subjective and precise quantifying of blood loss is difficult.

The previously used terms of menorrhagia and dysfunctional uterine bleeding have been rejected by the International Federation of Gynecology and Obstetrics (FIGO), and the FIGO Classification of Causes of Abnormal Uterine Bleeding now uses the term abnormal uterine bleeding (AUB) – bleeding that is abnormally heavy and/or abnormal in timing. Within the description of AUB, FIGO has included the term heavy menstrual bleeding (HMB) – bleeding above the 95th percentile of the normal population.

When NICE published guidance for the treatment of HMB in 2007 they recommended that HMB be defined as excessive menstrual blood loss that interferes with the woman’s physical, emotional, social and material quality of life. From these recommendations the emphasis has moved from quantitative measurement to assessment of the overall effects on quality of life.

**Diagnosis**

The most clinically useful discriminator for HMB is the patient’s own subjective description of their monthly blood loss from the clinical history. Pictorial blood loss charts and menstrual calendars are, however, useful tools to aid monitoring of symptoms (see Figure 1).

A description of regular menstrual flooding, the passage of blood clots and the interruption of activities of daily living such as work and exercise all suggest a situation that is intolerable to the individual and therefore requires treatment. A full history is essential, covering the nature of bleeding and associated symptoms, including the presence of inter-menstrual or postcoital bleeding. Physical examination (in particular assessment of uterine size) is useful in cases where histological or structural abnormalities are suspected on the basis of the history.

**Investigations**

All women presenting with HMB should have their full blood count checked. Routine hormone profile or thyroid function testing is not recommended, particularly in a woman who continues to have regular bleeding.

Ultrasound is the first-line imaging tool. The current recommendation from NICE is to perform imaging when the uterus is
palpable abdominally, vaginal examination reveals a pelvic mass of uncertain origin or when pharmaceutical treatment fails.¹

In women presenting over the age of 45 years there should be a high index of suspicion for endometrial cancer or atypical hyperplasia, particularly with persistent inter-menstrual bleeding and previous treatment failure. This group of women require an endometrial biopsy, which can usually be performed as an outpatient.

**Drug treatment**

Pharmaceutical treatment may be used as first line for HMB while investigations are being carried out and definitive management is planned (see Table 1). If effective, it is also suitable for longer-term treatment where no structural or histological abnormality is present or in the presence of small fibroids. These treatments may be the only option in patients for whom other interventions are unsuitable or declined. The pros and cons of these pharmaceutical options are given in Table 2.

The choice of most appropriate pharmaceutical treatment option should take into account the patient’s preference for hormonal or nonhormonal methods and mode of administration and their desire for contraception (see Figure 2).

Where a pharmaceutical treatment is found to be ineffective, a second should be considered prior to referral for surgery. However, in women with structural uterine abnormalities such as an enlarged fibroid uterus, surgical options should be given as a first line.

**Hormonal treatments**

**Levonorgestrel intrauterine system (LNG-IUS, Mirena)**

The LNG-IUS has transformed the management pathway of HMB over the last 15 years and is now the first-line option as recommended by NICE.

The LNG-IUS works by continuous release of 20µg levonorgestrel every 24 hours. It reduces endometrial proliferation ultimately resulting in endometrial suppression. The hormone acts largely on the endometrium itself, with some systemic absorption. Therefore progestogenic side-effects are relatively infrequent and generally minor.

Studies have reported a menstrual flow reduction of 83–87 per cent by the first year.⁵ However, patients should be warned of irregular bleeding that may occur within the first six months after insertion. Where feasible insertion should be timed towards the end of a period in the early proliferative phase, when the endometrium is at its thinnest.⁶ This will reduce the likelihood of unscheduled bleeding.

The LNG-IUS is also extremely effective reversible contraception. It is replaced every five years and should be recommended in women who anticipate using it for more than 12 months.

The LNG-IUS holds a number of advantages over other treatments for HMB including ease of insertion, no requirement for anaesthetic, excellent reversible contraception and avoidance of risks of surgery. Compared with other medical treatments for HMB the LNG-IUS results in greater improvement in quality of life and women are more likely to continue with this treatment than with other medical treatments at two years.⁷

**Combined oral contraceptive (COC)**

The COC works by inhibiting ovulation and endometrial proliferation. There is evidence that the COC significantly reduces menstrual blood volume by 48–68 per cent at one year.⁵ A monophasic COC with 30µg ethinylestradiol combined with norethisterone or levonorgestrel is generally recommended when commencing a first prescription of COC.⁶

There is known to be an increased risk of thromboembolic events in high-risk patients – this includes women with increased BMI, smokers and those over 40 years of age. Therefore a medical history, including family history, pre-existing medical conditions and drug and smoking history, should be elicited. There is some evidence that norethisterone- and levonorgestrel-containing COCs carry a lower relative risk of thromboembolism than those containing desogestrel or gestodene.

The COC is suitable for women who do not currently wish to conceive but want to retain long-term fertility. In addition there is the benefit of regularisation of the cycle and the option of using consecutive pill packets to reduce the frequency of bleeding.

**Oral progestogens**

The most commonly used progestogens are norethisterone and medroxyprogesterone acetate. Short-term

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**Figure 1.** The pictorial menstrual blood loss chart allows for a more objective assessment of the quantities of blood lost.
Use induces secretory change in the endometrium but, if given over an extended period, proliferation of the endometrium is inhibited and eventually endometrial atrophy is induced.

If used cyclically progestogens should be commenced during the proliferative phase in order to arrest proliferation and subsequently reduce bleeding. Use from day five to day 26 (21 days) of each cycle is recommended. At high doses, oral progestogens are also an effective method in arresting acute heavy bleeding.

Oral progestogens are third line as recommended by NICE, and are indicated in women in whom other treatments (see above) are not suitable or desired. Patients should be advised that this is not an effective method of contraception.

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Long-acting progestogens Depot medroxyprogesterone acetate is a 12-weekly intramuscular injection that works by preventing proliferation of the endometrium. Besides being an effective treatment of HMB, it is also a form of contraception. It is not licensed specifically for use in HMB and return to fertility after discontinuing treatment can be slow, sometimes taking up to one year. Patients opting for this treatment usually have complete amenorrhoea, although some will experience menstrual irregularity.

GnRH analogues Gonadotrophin-releasing hormone (GnRH) analogues are used to induce amenorrhoea. Continuous release of GnRH leads to inhibition of gonadotrophin (FSH, LH) production by the pituitary gland, and therefore shuts down the menstrual cycle.

Long-term use is not advised due to the adverse side-effect profile, including menopausal symptoms and bone density depletion. If length of use is anticipated to be more than six months, add-back oestrogen should be considered. GnRH analogues are more commonly used as short-term treatment in women with extreme symptoms or as a pre-procedure preparation in those planning to undergo endometrial ablation surgery, myomectomy or hysterectomy.

Selective progesterone receptor modulators Selective progesterone receptor modulators (SPRMs) include ulipristal acetate (Esmy) and have recently been licensed for short-term treatment of uterine fibroids. These have been found to result in amenorrhoea in over 70 per cent by 12 weeks. Longer-term

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Administration</th>
<th>Hormonal</th>
<th>Contraceptive</th>
<th>Side-effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tranexamic acid</td>
<td>tablets, to be taken while bleeding 1g qds – but smaller doses may still be effective</td>
<td>no</td>
<td>no</td>
<td>indigestion, diarrhoea, headaches</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>tablets, to be taken while bleeding (eg mefenamic acid 500mg tds, ibuprofen 400mg tds)</td>
<td>no</td>
<td>no</td>
<td>indigestion, diarrhoea, exacerbation of asthma, peptic ulcer</td>
</tr>
<tr>
<td>IUS</td>
<td>intrauterine device (lasts for 5 years)</td>
<td>yes</td>
<td>yes</td>
<td>initial irregular spotting, amenorrhoea in 20–30%, hormonal side-effects, rarely uterine perforation at time of insertion</td>
</tr>
<tr>
<td>Combined oral contraceptive pill</td>
<td>tablet taken for 21 days of 28-day cycle (option to take continuously)</td>
<td>yes</td>
<td>yes</td>
<td>mood changes, headache, fluid retention, breast tenderness, risk of venous thromboembolism</td>
</tr>
<tr>
<td>Oral progestogens</td>
<td>tablets to be taken from day 5 to day 26 of each cycle; effective for anovulatory bleeding (eg norethisterone 5mg tds)</td>
<td>yes</td>
<td>yes</td>
<td>weight gain, bloating, headaches, breast tenderness, depression</td>
</tr>
<tr>
<td>Injected/ implanted progestogens</td>
<td>12-weekly intramuscular injection, or 3-yearly subdermal implant</td>
<td>yes</td>
<td>yes</td>
<td>weight gain (injectables only), irregular bleeding, progestogen side-effects (as above), reversible loss of bone density (injectables only)</td>
</tr>
<tr>
<td>GnRH analogues</td>
<td>monthly injection (eg Decapeptyl SR 3mg once a month)</td>
<td>yes</td>
<td>no</td>
<td>menopausal-like symptoms, osteoporosis</td>
</tr>
<tr>
<td>SPRMs</td>
<td>5mg tablet to be taken orally once daily for up to 3 months</td>
<td>yes</td>
<td>no</td>
<td>headache, endometrial thickening, hot flushes, uterine haemorrhage</td>
</tr>
</tbody>
</table>

Table 1. Administration, characteristics and side-effects of drug treatments

use induces secretory change in the endometrium but, if given over an extended period, proliferation of the endometrium is inhibited and eventually endometrial atrophy is induced.

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use is currently restricted by concerns regarding the effects on the endometrium, with altered structural glandular features and abnormal stromal vessels in many women. However, following cessation by six months the endometrium appears to return to a normal appearance.\textsuperscript{10}

At present SPRMs are used prior to surgery to reduce the size and vascularity of fibroids; however, because of the potential sustained effects on fibroid size and menstrual loss, they may have a role in mid- to long-term symptom control.

Nonhormonal treatments
Tranexamic acid and NSAIDs
Tranexamic acid is an antifibrinolytic drug that works by inhibiting plasminogen activator. Despite this there is no evidence that it increases the risk of thromboembolic events. However, in patients at high risk of thromboembolic events, it should be used with caution. A previous study has shown a 40–50 per cent reduction in menstrual blood loss.\textsuperscript{11}

The half-life of tranexamic acid is short and it is taken only during days of menstruation. Therefore, it is suitable for women who are trying to conceive and those who do not wish invasive treatment. In patients with moderate renal insufficiency, the dose of tranexamic acid used should be reduced.

NSAIDs work by inhibition of the cyclo-oxygenase enzyme, thereby reducing the production of prostaglandins. Prostaglandin production is associated with vasodilatation and therefore HMB. NSAIDs also suppress prostaglandin-mediated uterine contractions.

Mefenamic acid is an NSAID licensed specifically for HMB and dysmenorrhoea. Additionally, naproxen and ibuprofen are licensed for dysmenorrhoea only. Gastrointestinal side-effects are reportedly less with mefenamic acid than other NSAIDs. Where dysmenorrhoea co-exists with HMB, NSAIDs should be used preferentially over tranexamic acid in the first instance.

It is common practice to prescribe mefenamic acid and tranexamic acid in combination as treatment for HMB. As their modes of action are different, there may be a synergistic effect when taken together.

Tranexamic acid and NSAIDs can be used indefinitely if found to be effective; however, where a woman’s symptoms are not alleviated after a three-month treatment course, alternatives should be sought.

Further treatment for HMB
Endometrial ablation
Endometrial ablation should be offered to women whose symptoms are severe and who do not wish to conceive in the future. This procedure involves destruction and removal of the endometrium. It is suitable for women with a normal-sized uterus or with fibroids less than 3cm in diameter. Overall, the rate of amenorrhoea at 12 months is about 40 per cent.

Endometrial ablation can be divided into first- and second-generation techniques. First-generation techniques involve resection or ablation of the endometrium under direct hysteroscopic vision using electrocautery. Second-generation techniques generally require less expertise and can be performed without hysteroscopic guidance, potentially on an outpatient basis; there is increasing evidence that they are equally effective and have lower complication rates.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Limitations (including contraindications)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levonorgestrel-IUS</td>
<td>up to 90% reduction in blood loss</td>
</tr>
<tr>
<td>Tranexamic acid</td>
<td>reduces blood loss by 40–50% only needs to be taken during the period itself suitable for women wishing to conceive</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>reduce blood loss by 30–50% reduce menstrual pain only need to be taken during the period itself</td>
</tr>
<tr>
<td>Combined oral contraceptive pill</td>
<td>reduces blood loss by 50% alleviates menstrual pain and irregularity provides contraception</td>
</tr>
<tr>
<td>Progestogens</td>
<td>reduce blood loss by 30% (more in anovulatory women) ability to control and predict onset of menses can be used for the treatment of acute heavy bleeding</td>
</tr>
</tbody>
</table>

Table 2. Pros and cons of drugs used in treatment
Myomectomy
When uterine fibroids are thought to be the cause of HMB, excision of the fibroid tissue from the uterus (myomectomy) may be performed via open laparotomy, laparoscopic or transcervical approaches. Myomectomies are performed in women who have symptomatic fibroids who wish to preserve the uterus (usually in order to conceive in future). Patients should be warned of the small risk of hysterectomy should there be uncontrollable blood loss intraoperatively.

Uterine artery embolisation
Uterine artery embolisation (UAE) is an alternative treatment for women with HMB secondary to uterine fibroids larger than 3cm. It is less invasive and recovery time is faster when compared to myomectomy and hysterectomy and is therefore an attractive option for women who wish to avoid surgery. Trials have demonstrated that UAE improves symptoms in 60–90 per cent of women, and that the reintervention rate by five years is around 30 per cent. However, there is evidence of increased risk of adverse pregnancy outcome following UAE and patients should be made aware of this.

Magnetic resonance-guided focused ultrasound
Magnetic resonance-guided focused ultrasound (MRgFUS) uses MR imaging guidance to direct high-intensity focused ultrasound into a uterine fibroid resulting in coagulative necrosis of the fibroid tissue. This treatment was first performed in 2002 in the treatment of HMB caused by uterine fibroids. Since then this treatment has been associated with encouraging short- to medium-term results, although NICE has

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**Figure 2.** Primary-care management of heavy menstrual bleeding with indications for referral to secondary care

First-line treatments

1. Levonorgestrel-IUS
2. Tranexamic acid, NSAID or COC
3. Progestogen days 5–26

Use for 3 months

If blood flow is regulated and there are no side-effects, continue with the treatment indefinitely

If blood flow is still heavy try one of the other options or add tranexamic acid and/or mefenamic acid to the hormonal options

Review after 3 months

If blood flow is still unacceptable refer to gynaecologist

The following investigations can be requested: transvaginal ultrasound scan, full blood count and, if indicated, thyroid function and clotting screen

Refer if there is suspicion of histological or significant structural abnormality based on history or examination

Prescribes nonhormonal treatment

Tranexamic acid 1g 4 times a day and/or mefenamic acid 500mg 3 times a day on the heavy days

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The diagnosis of heavy menstrual loss is based on the patient’s subjective experience of their physical, emotional, social and material quality of life.

In women over 45 years endometrial hyperplasia or cancer should be excluded by biopsy.

Where suitable, the LNG-IUS should be used as first-line treatment.

Pharmacological treatment may be continued long term if successful.

If unsuccessful, surgical treatments are available suggested that more evidence is required before its widespread use.

**Hysterectomy**

Hysterectomy is usually offered as the final definitive treatment where other options have failed or are unsuitable. It has a 100 per cent success rate in terms of treating HMB. The number of women undergoing this procedure has fallen sharply over the past 10 years due to development of alternative treatment methods – primarily the use of the LNG-IUS and endometrial ablation techniques. Women opting for a hysterectomy should be counselled about the associated risks of major surgery including infection, bleeding, damage to visceral organs and thrombosis.

The route of hysterectomy will depend on factors such as uterine size, mobility and descent of uterus, presence of fibroids and previous surgical history. NICE guidelines recommend consideration in the following order where possible – vaginal, laparoscopic, abdominal.

**Conclusion**

There are now a variety of effective treatments available for the management of HMB. Choice of treatment should be tailored to a patient’s preference for use of hormonal/nonhormonal options, desire for fertility/contraception, medical history and choice of surgical versus pharmaceutical options.

In most cases a trial of first-line pharmaceutical treatment is advocated, with further escalation to surgical treatment if symptoms are not improving. This is especially true in women where no structural or pathological abnormality is present. Patients should be counselled appropriately and given the opportunity to make an informed decision with regards to choice of treatment.

**References**


**Declaration of interests**

None declared.

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**Resources**

**Prescriber articles**


**Guidelines**

Heavy menstrual bleeding. CG44. NICE. January 2007.
