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Management of Abnormal Uterine Bleeding in Low- and High-Resource Settings: Consideration of Cultural Issues

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ABSTRACT

In non industrialized countries the incidence of heavy menstrual bleeding (HMB) appears to be similar to that of industrialized countries, although data is scanty. In low-resource settings, women with abnormal uterine bleeding (AUB) often delay seeking medical care because of cultural beliefs that a heavy red menstrual bleed is healthy. Efforts to modify cultural issues are being considered. A detailed history and a meticulous examination are the important foundations of a definitive diagnosis and management in low-resource settings but are subject to time constraints and skill levels of the small numbers of health professionals. Women's subjective assessment of blood loss should be combined, if possible, with a colorimetric hemoglobin assessment, if full blood count is not possible. Outpatient endometrial sampling, transvaginal sonography, and hysteroscopy are available in some non industrialized countries but not in the lowest resource settings. After exclusion of serious underlying pathology, hematinics should be commenced and antifibrinolytic or nonsteroidal anti-inflammatory drugs considered during menses to control the bleeding. Intrauterine or oral progestogens or the combined oral contraceptive are often the most cost-effective long-term medical treatments. When medical treatment is inappropriate or has failed, the surgical options available most often are myomectomy or hysterectomy. Hysteroscopic endometrial resection or newer endometrial ablation procedures are available in some centers. If hysterectomy is indicated the vaginal route is the most appropriate in most low-resource settings. In low-resource settings, lack of resources of all types can lead to empirical treatments or reliance on the unproven therapies of traditional healers. The shortage of human resources is often compounded by a limited availability of operative time. Governments and specialist medical organizations have rarely included attention to AUB and HMB in their health programs. Local guidelines and attention to training of doctors, midwives, and traditional health workers are critical for prevention and improvement in management of HMB and its consequences for iron deficiency anemia and postpartum hemorrhage, the major killer of young women in developing countries.

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KEYWORDS

Low-resource setting - management - heavy menstrual bleeding

Heavy menstrual bleeding (HMB) is viewed very differently by many women in low-resource settings from women in privileged, educated (secondary and tertiary), and industrialized societies. Perception of

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“normality” of menstruation and the tolerance of heavy bleeding may be quite different. In many low-resource settings women regard a “strong” flow of red blood as desirable and therefore the “complaint” of excessively heavy bleeding is less frequent than in many industrialized countries. The myth of the need for a monthly “cleanout” of body impurities and “humors” persists into many higher resource countries and cultures but appears to be much more pervasive in the non industrialized countries.

It is not entirely clear whether the monthly menstrual blood loss experience differs in women from different cultures. In women from “normal” populations in Europe, mean monthly measured blood loss has usually been ~30 to 40 mL, whereas in studies in China and Japan it has been 50 to 60 mL.[1] This difference may be genuine or may reflect the inclusion, as “normal,” of many women who would have already complained of HMB in the Western world.

This perceived desirability of a heavy monthly blood loss is one of the most potent contributors to the high incidence of iron deficiency and anemia in low-resource settings. In many countries, like India, hemoglobin of ≤80 g/L is common in rural women, a consequence of deficient diet, HMB, and numerous pregnancies. This combination of severe anemia and iron deficiency has to have substantial impact on the efficiency of body functioning for these women, even though most of them continue to undertake a heavy daily workload. Studies have indicated that iron deficiency on its own, even without anemia, contributes to a significant increase in symptoms of lethargy, tiredness, and inefficiency.

Recent evidence has demonstrated that women with preexisting anemia have a greater chance of dying if they experience a postpartum hemorrhage, and more efficient recognition and management of iron-deficient anemia in low-resource settings is critical for the overall health of the women and children, and hence the whole population, in these cultures.

This review addresses a range of cultural beliefs and behaviors, and ways in which they may need to be taken into account during the management of a common and potentially disabling symptom with limited resources. These approaches are contrasted with some of the cutting-edge technologies available in the industrialized countries and indeed in increasing numbers of privileged sectors of the non industrialized countries.

#

AN AWARENESS OF MYTHS, CULTURAL ISSUES, AND THEIR IMPLICATIONS

During biblical times a woman was considered to be unclean for 7 days from the start of a normal menstruation, and if she had prolonged bleeding, she was considered to be unclean for the entire duration of her bleeding.[2] In many communities, menses is considered to be the natural, monthly cleansing process for the uterus and vagina for sperm, bacteria, and cellular debris. In these communities, HMB is also perceived as a normal integral part of women's health and is actually thought to be a good thing as it “cleans the body well.” Abnormal uterine bleeding (AUB) is considered as very personal and not discussed openly in these communities. As a result of these beliefs, even with severe AUB, medical consultation is often delayed.[3] [4] [5] [6]

Women from lower socioeconomic strata in certain communities traditionally tend to use varying types of material ranging from old cloths, towels, rags, and occasionally new ones, to contain the menstrual flow. These cloths are washed after use, dried in hidden corners, and reused until they are torn or threadbare and cannot be used any longer. Although this practice is probably due to economic constraints, there are certain cultural beliefs that the use of modern sanitary pads does not allow menstrual blood to come out freely and bring out all the disease.[3] [4] In some of these communities the used cloths are buried, and not burned, because of fears of the possible grievous consequences that could follow the burning of human blood.[3] In these communities the use of tampons is extremely rare, and if used at all, it would be by women of higher socioeconomic strata.[3] [4] Unhygienic practices, combined with another myth commonly prevalent in these communities that bathing during menses is bad for the menstruating woman, has been suspected of leading to ascending infection of the female genital tract.[3] [4] [7] [8] [9]

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AUB in adolescents often leads to these children missing school, thus adversely affecting their education, but it can also be the first presentation of a serious underlying hemorrhagic disorder. In many nonindustrialized low-resource countries, adolescents are often brought for medical consultations by their parents and this is often delayed.[6] [10] In certain communities, the health-seeking behavior of adolescents with AUB has been shown to be significantly correlated with the socioeconomic and educational status of their parents.[10] In addition to the other benign causes such as polyps, leiomyomata, hormonal imbalance, and alterations of endothelial vasoactive substances, AUB at any age may also be the first presentation of a serious underlying condition such as a carcinoma of the uterine cervix or endometrium. Therefore, AUB is a major public health problem at all ages.

If neglected, HMB could even lead to serious iron deficiency anemia right through the reproductive years.[11] [12] [13] Iron deficiency anemia results in lethargy, poor work tolerance, decreased social functions, increased susceptibility to infection, and poor wound healing. South Asian women who have HMB tend to avoid what they refer to as “heaty food” (e.g., meat, fish, and eggs) and thus deprive themselves of valuable sources of iron when in fact they need additional iron. Some of them may not even seek medical help if they cannot find a female medical practitioner.[14] [15]

If a severely anemic woman becomes pregnant she will carry an increased risk of fetal growth restriction and preterm delivery, and infants born to anemic mothers carry an increased risk of not only anemia during infancy but also retardation of physical, mental, and psychological development during childhood. Anemic women will be less able to tolerate even a mild postpartum hemorrhage (PPH), and it has been shown that anemia may in fact carry an increased risk of PPH.[16] Similarly, a woman who is anemic on entering pregnancy has a greater chance of dying if she experiences a PPH. This is of great concern because PPH is the leading cause of maternal mortality in several non industrialized low-resource countries.

HMB has a major impact on the quality of life of women, which has been found to be correlated with the hemoglobin levels of these women.[17] In the United Kingdom, health-related quality of life (HRQOL) of women with AUB has been shown to be associated with psychological morbidity, diminished sexual functioning, and adverse effects on socioeconomic, professional, and family life. Women with AUB have been shown to have HRQOL <25th percentile for the general population.[18]

AUB, however, is not included in the Global Burden of Disease estimates.[19] It has also been shown that both in the United Kingdom as well as in the United States, the questionnaires used and the questions asked by medical practitioners were not specific enough and did not adequately cover the aspects of women's lives most affected by AUB.[20] [21] Furthermore, it has been suggested that medical practitioners need updating of their medical training because they may fail to use appropriate and effective diagnostic and therapeutic measures in the treatment of AUB.[22] [23] [24] Although data are not available, it is reasonable to expect a similar scenario in low-resource settings.

Although the standard definition of HMB is a blood loss >80 mL per cycle, healthy Chinese women have been reported to have means and median values of normal menstrual loss ranging from ~50 to 60 mL with a 90th percentile of ~120 mL.[1] This is higher than the levels of normal menstrual blood loss reported from other countries. Mean menstrual blood loss reported from nulliparous Kenyans and adolescent Nigerians varies from ~30 to 40 mL.[25] [26] Menstrual blood loss of even 60 ml has been shown to adversely affect the body iron stores of Brazilian women,[27] probably because they have latent iron deficiency.

In a World Health Organization multicenter study, the prevalence of AUB in certain nonindustrialized countries was reported to vary from ~8% in the rural Philippines to 16% in Pakistan and a high of 27% in the newly settled zones of Colombia.[28] Other studies have reported HMB rates of 20% in China[29] and 25% in Turkey.[30] HMB in 12% of teenagers[31] and 28% of women between 36 and 40 years of age[32] have also been reported from Nigeria and India, respectively. It has been suggested that management guidelines for HMB in the adult may not be appropriate for the adolescent.[31]

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UNMET NEED FOR MANAGEMENT OF HEAVY MENSTRUAL BLEEDING IN LOW-RESOURCE SETTINGS

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Why Women Do Not Present for Treatment

It is well known that many women, particularly in the non industrialized countries, are reluctant to access health facilities for menstrual complaints such as HMB. A survey in rural Gambia revealed that, although 16% of women had irregular cycles, 14% had dysmenorrhea, 8% had spotting, and 4% suffered from heavy or prolonged bleeding, only a minority of women had sought health care, and menstruation was considered to be a highly personal and secretive topic in this population.[5]

Although menstrual disturbances, particularly HMB, are among the most common reasons for women to attend a gynecologic clinic in non industrialized countries, these symptoms can be such a cause of embarrassment and inconvenience to any woman that they have a major influence on her health-seeking behavior.[33] In their attitudes toward menstruation they consider it a natural event but fail to accept it as a debilitating one.[34] This makes many women accept even very heavy menstrual loss as a natural phenomenon.

The widespread acceptance of menstruation as having a healthy, cleansing effect, which exists in many non industrialized countries,[35] may also contribute to women accepting heavy loss as positive, which further delays their seeking of treatment. A study among Taiwanese women showed clearly that beliefs in menstruation are related to their physical, cognitive, behavioral, and psychological constitution.[36]

In many societies the topic of menstruation is not talked about much and is considered a taboo.[5] A traditional culture of silence often surrounds menstruation and typically inhibits women obtaining information regarding services and seeking treatment. In Gambia it has been found that women customarily speak to no one except their mothers about their menstrual periods.[5] The lack of reproductive health education and access to information tends to propagate myths and negative attitudes toward menstruation and affects seeking help. However even in some industrialized countries women try to comply with a strong message that menstruation should be concealed. The authors of a study in the United Kingdom concluded that the social pressure to maintain concealment of menstruation is a strong influence on women's health-related behavior in response to menstrual concerns.[37]

Furthermore, in low-resource settings patients may have to travel long distances and face many geographic difficulties to receive medical assistance. This may make them reluctant to make any effort to seek treatment and will usually lead to prolonged postponement of attempts to seek treatment.

Thus all these societal attitudes and influences contrive to persuade women to perceive heavy loss as an unimportant health concern. This leads to delay in seeking care, nonacceptance of treatment modalities such as surgery, and often to discontinuation of treatment schedules. Conversely, it may encourage them to explore ineffective, unproven or potentially harmful “traditional” methods of treatment.

#

Limited Resources for Investigation and Treatment

Management of HMB invariably incurs investigation for a cause and to assess anemia, the most obvious complication of heavy menstrual loss. The facilities to do these are limited in most of the non industrialized countries, which leaves no choice for the care providers but to select treatment options arbitrarily relying mostly on clinical examination supported by their experience. Diagnosis of anemia itself is problematic in low-resource settings, and clinical diagnosis is the method commonly resorted to, which is only 65% sensitive in detecting severe anemia <7 g/dL and even more inaccurate in detecting less severe anemia.[38] Most of the existing methods for measuring hemoglobin may be expensive, complex, or impractical for use

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in low-resource settings. Most of the modern methods are simple to operate but use costly disposable items making them too expensive for widespread use.[38]

Simple methods such as counting the number of days or counting the number of protective materials used are methods available for assessing the blood loss in low-resource settings. These methods are known to have many limitations. However, an improvement of the situation was by the use of pictorial representation of blood loss. Pictorial assessment of blood loss has been demonstrated to be useful in assessing blood loss in a semiquantitative manner, although it was initially described among women in non industrialized countries.[39] A study to assess whether such pictorial charts could be useful in clinical practice was conducted among rural Turkish women and found to be very acceptable.[33]

The Hemoglobin Color Scale (HCS), a simple, rapid, and cheap method for estimating hemoglobin concentration with a finger prick blood sample, has been developed for use in resource-poor settings where there is no laboratory. This is the only method currently available that is affordable for widespread primary care use by the most impoverished countries.[38] A review of 14 studies concluded, that "Despite limitations, the HCS may be a useful tool for anemia diagnosis. Sensitivity and specificity were high in laboratory-based studies, but deteriorated substantially as the studies moved from accuracy assessments in 'ideal' populations in the laboratory to more 'real-life', pragmatic evaluations."[40] The most likely explanation for this is the less intensive training and supervision available in the field." The HCS has the potential to be an appropriate tool currently available for the detection of mild and moderate anemias, which are likely to be missed by clinical diagnosis alone but still require treatment.

An effective laboratory service is an essential part of any functional health service. Laboratories require good logistical supply and utility services to be in place to function properly, which is difficult to achieve even in urban centers in the developing world. This makes the provision of laboratory services even more problematic and difficult to sustain in remote rural areas. Reliable results from laboratory investigations are crucial elements in decision making in almost all aspects of health services.[41]

This is all the more important in managing women with heavy menstrual loss, as due to lack of facilities one may fail to exclude causes such as hypothyroidism. This may lead to treating the anemic poorly nourished woman with surgery, whereas simple replacement therapy could often be sufficient to help her. Similarly, lack of imaging facilities would hamper the diagnosis of causes of heavy bleeding such as submucosal fibroids, which is an important cause of HMB in the relatively younger group of women, who may be managed inappropriately, due to lack of this facility.

#

Limited Local Human Resources (Skills and Knowledge)

Human resources are the crucial core of a health system. Human resources are in very short supply in health systems in low- and middle-income settings and greatly reduce available strategies to address the problem. The potential to expand numbers of doctors and nurses through training is highly constrained. This is a difficult issue involving the interplay of multiple factors and forces.[42]

The deficiencies and inequalities of distribution of human resources are inherent problems in non industrialized countries. This is not limited to specialists or doctors but is an issue cutting across all categories of health-care providers. For example, one of the greatest limiting factors to improving laboratory capacity in non industrialized countries is the availability of properly trained laboratory personnel.[40] [41]

In low-resource settings, in addition to difficulties in reaching a facility where effective and long-term solutions to their problem of HMB could be found, there may be a further delay in obtaining the proper treatment due to the shortage of trained medical personnel and also the lack of operative time when surgery is required.

As a form of improving the quality of care of women with HMB within the existing human resources situation, simple methods of improving the care need to be looked into, such as adapting and using

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algorithms and protocols within the available resources.[42] This kind of approach would not only streamline the management patterns to improve the quality of care but also result in effective use of the available facilities and resources.

In countries where there is a mismatch of the distribution of doctors and specialists in the geographic distribution, it may be essential to encourage use of the services of a midwife (family health worker) or an equivalent health-care provider who has had training in reproductive health. Such task-shifting initiatives are being explored for many health-care options in non industrialized countries. The role of the midwife in the care of the woman with HMB will vary, depending on the education, clinical experience, and the training she had, as well as the availability of protocols. Midwives have important roles in the early detection, quality-of-life impact, management, or co-management of the treatment and follow-up care of the woman with HMB. [42]

#

Roles of Traditional Healers

Traditional healers are an integral part of the culture and society in non industrialized countries and are the main providers of health care in many rural areas. It is estimated that up to 80% of people in low- and middle-income countries may rely on traditional medicine for their primary health-care needs.[43] Women with heavy menstrual loss in rural areas are likely to approach them initially or at some point of time. Usefulness of involving traditional healers in the care of patients with human immunodeficiency virus (HIV) [44] is well recognized. Although in Senegal there seems to be significant debate about the harmful expectations created by some traditional healers, there is an effective parallel movement to include traditional healers in action plans. This has highlighted their significant role in the HIV/AIDS epidemic. With adequate sensitization they may form a crucial link between the formal and informal health sector.[44] A similar effort was made in Sri Lanka three decades ago incorporating the assistance of Ayurvedic practitioners in popularizing modern methods of contraception, such as the pill. Similarly, systematic involvement of the traditional healers has improved the outcome of children affected with malaria in Tanzania.[45]

An obstacle to making use of traditional healers has been their lack of knowledge about HMB. The existence of important misconceptions about causes of menstrual disorders among allopathic doctors in Pakistan is well documented and leads to the use of inappropriate protocols for diagnosing and treating such disorders. [46] This has led to women spending their very limited cash resources on ineffective methods of treatment.

#

Role and Responsibilities of the Policymakers and Governments

Because menstrual problems are generally perceived as only minor health concerns and thus irrelevant in non industrialized countries, the women may face life-threatening conditions.[47] Data on the frequency of menstrual dysfunction and on the impact of AUB on health status, quality of life, and social integration among women in non industrialized countries are scanty. This lack of data and the “private” nature of menstruation in non industrialized countries may be a cause of the belief that menstrual complaints do not warrant the public health community's attention.[47] However, available data suggest that the prevalence of menstrual disturbances is comparable to the industrialized countries. Not only is HMB a serious health concern in the woman's life but it also disrupts her activities and causes an economic burden.

In non industrialized countries more attention should be paid to inclusion of diagnosis and treatment of menstrual complaints within reproductive health-care programs.[48] More attention should specifically be given to improving the training of primary care and reproductive health professionals about the diagnosis and treatment of menstrual morbidities.[48] Protocols and guidelines for management should be developed according to the facilities and resources available in low-resource settings. Furthermore, it is necessary to educate the public regarding the seriousness of HMB and to try and eradicate the myths and misbeliefs

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regarding menstruation and menstrual disturbances. The specialist societies for obstetricians and gynecologists in each low-resource country have an important role to play in such advocacy.

The difference in the health impacts of HMB between women in industrialized countries, and those in non industrialized countries is not in their anatomy or the causes of these gynecologic conditions but in their unfortunate social circumstances and the commitment and the capacity of their respective governments to provide health care.

Medical practitioners in low-resource settings need to be adequately trained and their knowledge and skills updated regarding the appropriate, feasible, acceptable, and cost-effective methods that could be adopted to enable improved detection, monitoring, and management of AUB, with the limited resources available. This would lead to better prevention, early detection, and appropriate management of adverse sequelae such as anemia, as well as other underlying conditions such as hemorrhagic disorders, pelvic infection, fibroids, and cervical and endometrial carcinoma. They should also be educated regarding the special needs of the adolescent with AUB. This would result in an improvement of reproductive health in general. Educating women regarding appropriate hygienic measures during menstruation, the potential risks associated with abnormal vaginal bleeding, advising them to seek early medical care for any AUB or HMB, and encouraging them to come for regular follow-up and continue appropriate treatment are also important strategies that could be adopted to improve the reproductive health of women living in low-resource settings.

#

APPROACHES TO MEDICAL MANAGEMENT

Medical management is the first line of treatment as well as the preferred treatment in the management of HMB, and it plays a major role in low-resource settings. Drug therapy is the least expensive and invasive method of treatment for managing HMB and should be the initial treatment of choice.[49] Due to cultural beliefs prevailing in many areas, women are often scared of surgery and tend to avoid it.

The aims of the management are to exclude any cervical or endometrial carcinomas, treat any underlying cause for HMB such as hypothyroidism or a bleeding disorder, correct anemia and replenish iron stores, and correct or prevent heavy menstrual blood loss.

#

Correction of Anemia

In low-resource settings, usually because there is a delay in seeking treatment by the women, most of them are diagnosed to be anemic, often severely. Anemia not only affects her quality of life, but it could also lead to serious complications like heart failure, and it should be corrected early.

Iron can be given orally as ferrous preparations; 60 to 180 mg of elemental iron per day is sufficient to steadily correct the anemia and replenish the depleted iron stores. Absorption of iron is more effective when taken on an empty stomach and is inhibited by tea, coffee, milk products, and calcium. Oral iron therapy may cause gastrointestinal side effects such as nausea, vomiting, and constipation, thus causing a few patients to discontinue treatment.

In cases of noncompliance or inability to tolerate the side effects, parenteral iron preparations can be used. There is a recent move toward newer and safer parenteral preparations such as ferric carboxymaltose, although these are initially more expensive.[50] The reticulocyte count increases within 2 to 3 days of starting oral iron, and usually the hemoglobin level increases by 10 g/L per week from the second week of beginning treatment. Once the hemoglobin level has been normalized, the oral iron therapy should be continued for a further 4 to 6 months to replenish the iron stores.

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Correction of Heavy Menstrual Blood Loss

The goals of medical management include suppressing the endometrium, preventing asynchronous endometrial sloughing, and adjusting prostaglandins and other molecular systems to favor vasoconstriction. [51] There is a wide range of effective medical preparations available for the treatment of HMB (Table [1]).

Table 1 Choices of Medical Therapies Widely Available in Many Lower Resource Settings

Antifibrinolytic agents	• Tranexamic acid • Epsilon-aminocaproic acid (rarely used today) • Desmopressin (for certain coagulopathies)
Nonsteroidal anti-inflammatory agents	• Mefenamic acid: 500 mg three times a day • Meclofenamate sodium: 100 mg three times a day • Flurbiprofen: 100 mg twice a day • Naproxen: 500 mg twice a day
Progestogens	• Oral cyclical progestogens (21 of 28 days) • Oral continuous progestogens • Long-acting intramuscular progestogens • Progestogen intrauterine systems
Combined oral contraceptive pill (COCP)	• Conventional monophasic 20- to 30-µg pills • Newer estradiol-based combined OCP

The choice of drug depends on the effectiveness, acceptability, tolerability, and affordability of the drug, a woman's fertility plans, and the presence of dysmenorrhea or other symptoms. For success of the drug therapy, it is necessary to individualize the treatment and involve the patient in decision making. There are many good reviews of medical therapy for HMB,[49] [51] [53] so only a summary of key issues is presented here.

#

Nonsteroidal Anti-Inflammatory Drugs

Endometrial prostaglandins are greatly altered in women with HMB.[52] Nonsteroidal anti-inflammatory drugs (NSAIDs) inhibit prostaglandin synthesis by inhibiting the enzyme cyclo-oxygenase and preferentially increasing uterine vasoconstriction. NSAIDS taken with menses reduce the menstrual blood loss by 20 to 50%,[53] and improve dysmenorrhea in 70% of cases.[54] NSAIDs can be brought over the counter, are cost effective, have to be taken only during the menses, and are easy to administer, making them very suitable for use in low-resource settings. Side effects such as gastrointestinal disturbances make it unsuitable for use in patients with gastritis and gastric ulcers. Also, there is a possibility of exacerbation of asthma if used in patients with asthma.

#

Antifibrinolytic Agents

Antifibrinolytic agents act by reducing tissue plasminogen activator (in endometrium) but have no effect on fibrinolytic activity of peripheral blood through inhibition of plasminogen activation.[55] It has no effect on blood coagulation or dysmenorrhea[56] and reduces blood loss up to 50%.[51] [53] Drug compliance is good because it has to be taken only during menses, and the side effects, which include nausea and cramps in legs, are minor. Tranexamic acid is the safe and effective preferred preparation in this situation, in a dose of 1.0 g two to three times daily in studies.

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Progestogens

Progestogens are the cornerstone of hormonal treatment of HMB and are available in many different presentations in many countries and can be administered by different routes, thus enabling the clinician to individualize the treatment according to the patient's requirement (Table [2]).

Table 2 Progestogens

Type of progestogen	Preparations	Administration	Benefits	Shortcomings
Oral cyclical progestogens	Norethisterone Medroxy progesterone	12 to 14 days starting from 14th day of cycle orally	Reduces bleeding in anovulatory cycles	Not helpful in those with ovulatory cycles Poor tolerance & compliance
Oral continuous progestogens	Norethisterone	21 days in each cycle orally	Reduces blood loss by 87%	Majority refused to continue beyond 3 months)
Long acting progestogens	Depot medroxy progesterone acetate (DMPA)	I/M once in 1–3 months	Amenorrhoea in the 1st year in 80% Prolonged action Contraceptive action at low cost	Irregular bleeding
Progestogen intra-uterine systems	Levonorgestrel-releasing IUS (LNG-IUS)	Intra uterine system	Very effective After 12 months no bleeding, only minimal spotting At 5 years 50% completely amenorrhoeic	Increased unscheduled spotting for 1–4 months Trained health worker needed for insertion & removal High cost

#

ORAL SHORT-CYCLE PROGESTOGENS

Oral progestogens such as norethisterone and medroxyprogesterone acetate, administered cyclically for 12 to 14 days starting from about day 14 of the cycle, have been helpful in reducing bleeding in anovulatory cycles[57] but not in those with ovulatory cycles.

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ORAL LONG-CYCLE PROGESTOGENS

Progestogens should be given orally for 21 days out of 28, or continuously, each cycle. Norethisterone given 5 mg three times a day continuously has reduced the menstrual blood loss by 87%[58] but was poorly tolerated, and 78% of women refused to continue therapy beyond 3 months. Because the tablets have to be taken long term, the compliance may be poor and tablets may be forgotten, causing breakthrough bleeding.

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LONG-ACTING INJECTABLE PROGESTOGENS

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Depot medroxyprogesterone acetate (DMPA) given intramuscularly once in 1 to 3 months causes atrophy of the endometrium and leads to amenorrhea within the first year in up to 80% of women.[59] Many may experience irregular bleeding. DMPA is well accepted by women in low-resource settings because it is convenient and "private" because it has to be administered by injection only once in 1 to 3 months and because it also acts as an effective contraceptive. DMPA has not been specifically tested for HMB.

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INTRAUTERINE PROGESTOGEN SYSTEMS

The main levonorgestrel-releasing intrauterine system (LNG-IUS) has a T-shaped plastic frame with a rate-limiting membrane in the vertical stem that releases a daily dose of 20 µg of levonorgestrel,[60] which is derived from Norethisterone. LNG-IUS is locally acting, greatly thickens the cervical mucus, and alters the utero-tubal fluid inhibiting sperm migration. It also has an adverse effect on the sperm motility and function throughout the genital tract and prevents fertilization.[61] It also causes pronounced decidualization and thinning of the endometrium.

During the first 3 to 6 months after LNG-IUS insertion, there is often nuisance-value unscheduled spotting and light bleeding, and thereafter the spotting reduces dramatically and by 12 months there usually is no red bleeding but only 1 to 3 days of spotting only.[58] [61] After 12 months, 20 to 30% of women are completely amenorrheic, which reaches >50% by 5 years.[62]

There are few contraindications for the use of LNG-IUS, but the use is preferably restricted to women whose uterine cavities measure 6 to 9 cm and are not distorted by submucous myomas.[62] [63] [64] The LNG-IUS is suitable for treating HMB due to most causes. It is not widely recognized that the LNG-IUS is also suitable for treatment of most nulliparous women.[62] [63] [64] However, the system is slightly wider than conventional copper intrauterine devices and requires a slightly different insertion technique. Hence specific training is recommended.

LNG-IUS has been found to be superior to other medical therapies for HMB in many clinical trials.[58] [62] [63] [64] It has also been shown that LNG- IUS is a safe and effective medical alternative to surgical treatment of HMB for most women.[64] LNG-IUS has shown to be as effective as thermal balloon endometrial ablation in treating HMB over 6 months[65] and 24 months in New Zealand women.[66] In a specific trial in Finland it was found that two thirds of women who used LNG-IUS to control HMB while awaiting hysterectomies eventually canceled their surgeries.[67] LNG-IUS has been effective and well tolerated by women with inherited disorders of hemostasis in whom treatment of HMB has previously been unsuccessful.[68]

LNG-IUS is the most effective medical treatment method for HMB and should be the first choice for women with HMB who require contraception but have not completed their families.[61] Because the initial cost of LNG-IUS is high it may not be available for use in most low-resource settings; however, several programs do exist to assist with subsidies for this device in specific settings. Because it is costly, many patients are reluctant to buy it in case it does not work or is spontaneously expelled. Therefore in low-resource settings the use of LNG-IUS is limited, although it has been used by >9 million women worldwide since its widespread launch in the 1990s.

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Danazol

Danazol is a steroid with a weak impeded androgenic activity, which has a complex mechanism of action resulting in marked thinning of the endometrium and reduction in menstrual blood loss up to 80%.[69] Relatively low doses of ≤200 mg daily may produce good results. However, danazol is associated, in a small minority of women, with troublesome side effects such as seborrhea, acne, hirsutism, breast atrophy, weight gain, and even voice changes. This has limited the duration of therapy and the acceptance by women.[70]

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The National Institute for Health and Clinical Excellence guidelines on HMB recommended that danazol should not be routinely used for treatment of HMB.[61]

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Use of Surgery for Heavy Menstrual Bleeding

The surgical options available for the treatment of AUB depend primarily on the underlying cause, and can be broadly divided into (1) techniques performed under hysteroscopic control, (2) nonhysteroscopic endometrial ablation techniques, and (3) major surgical procedures by laparotomy or advanced laparoscopic techniques.

Use of these different techniques depends heavily on the availability of skilled surgeons, appropriate equipment, safe facilities, and staff who are able to maintain the equipment. In most industrialized countries increasing numbers of gynecologic procedures are being undertaken by endoscopic approaches. In many low- resource settings, conventional surgery by laparotomy (or vaginal approaches for hysterectomy) is the norm.

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TECHNIQUES PERFORMED UNDER HYSTEROSCOPIC CONTROL

Examples of techniques performed under hysteroscopic control are rollerball ablation of endometrium,[71] [72] hydrothermal ablation of endometrium,[73] endometrial laser ablation,[74] transcervical resection of the endometrium (TCRE),[72] [74] and transcervical resection of fibroids (TCRF).[75] Danazol has been shown to be more cost effective than gonadotropin-releasing hormone (GnRH) analogs as an endometrial thinning agent prior to the hysteroscopic procedures,[76] and therefore it is the preferred endometrial thinning agent in low-resource settings. Preoperative GnRH analog therapy has been shown to shrink fibroids and effectively thin the endometrium, and therefore it has been used before hysteroscopic myomectomy.[77] However, endometrial thinning prior to TCRE and TCRF is not practiced universally as it is considered to be unnecessary. These hysteroscopic approaches may also have reasonable applicability in many medium-resource settings.[78]

The uterine distension medium commonly used during this procedure is 1.5% glycine, a nonionizing solution. Rollerball and the costly Nd:YAG laser system for endometrial ablation tend to have fewer complications than TCRE.[79] All these techniques need regional or general anesthesia, specialized training, surgical expertise and involve significant learning curves. Furthermore, other serious complications such as uterine perforation, infection, hemorrhage, thermal injuries, and even deaths have been reported.[79] [80] Although TCRE and rollerball have been largely abandoned for second-generation ablation devices, in many countries with adequate resources, TCRE, TCRF, and rollerball endometrial ablation may still be appropriate for low-resource settings, provided the gynecologists working in these settings are well trained and have adequate experience in using these procedures to minimize complications.[81] [82] TCRE and vaporization have been recommended as a good option in situations when hysterectomy is hazardous or is an unacceptable procedure for patients from rural areas in India.[82] [83]

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NONHYSTEROSCOPIC ENDOMETRIAL ABLATION TECHNIQUES

Many second-generation endometrial ablation techniques that are performed blindly (i.e., without hysteroscopy) have been developed. They include techniques such as cryotherapy, thermal balloon ablation, microwave endometrial ablation, laser interstitial hyperthermy, and three-dimensional bipolar ablation.[84] [85] [86] [87] [88]

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It is probable that cost effectiveness and long-term outcomes such as patient satisfaction and quality of life are "slightly better" in second-generation nonhysteroscopic endometrial ablation procedures compared with first-generation hysteroscopic procedures.[85] Among the advantages of these procedures are that they are quicker and can be performed as outpatient procedures without the need for regional or general anesthesia. It is relatively easy to acquire the skills needed to carry out these procedures compared with hysteroscopic procedures. However, these second-generation endometrial ablation techniques involve the purchase of relatively expensive new equipment and disposable devices. Therefore, in centers with limited financial resources, where hysteroscopes are currently available, it may be prudent to strengthen the expertise currently available to carry out first-generation hysteroscopic procedures rather than rapidly investing in these new second-generation nonhysteroscopic endometrial ablation devices.[88] If adequate financial resources can be found, of the currently available second-generation methods of endometrial ablation, thermal balloon ablation appears to be the best option in low-resource setting.

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MAJOR SURGICAL PROCEDURES

Major surgical procedures performed for AUB include myomectomy, performed laparoscopically or via open laparotomy,[89] and hysterectomy performed either abdominally, laparoscopically, or vaginally.[90] [91] AUB not responding to medical management and due to fibroids, in a woman whose fertility needs to be preserved and the fibroids are not suitable for TCRF, will require a myomectomy that could be performed laparoscopically or via laparotomy.[89] The route of surgery depends on the size and the location of the fibroids as well as the skills and the experience of the gynecologist. In the United States, although the cost of a laparoscopic hysterectomy has been shown to be not much different from that of an open hysterectomy in 1995, the cost of an open myomectomy was observed to be steadily increasing over the years.[92] Myolysis[93] and uterine artery embolization[94] for fibroids causing AUB are not currently appropriate in most low-resource settings. The same applies to the increasing numbers of new technical developments, such as magnetic resonance–guided ultrasound destruction of myomas.

For women with AUB in whom future fertility is not an issue, and where other forms of therapy are inappropriate (e.g., multiple fibroids causing massive enlargement of the uterus) or when other forms of therapy have failed, hysterectomy is the only viable option available. Hysterectomy is the only treatment modality which could give a 100% cure rate, and it gives the highest long-term patient satisfaction and quality of life.[90] [95] [96] Inevitably, however, it can be associated with increased morbidity in the short term. Although there are claims that laparoscopic hysterectomy is cost effective for all working women,[97] it may not be applicable in low-resource settings. Furthermore, some studies have shown that, because complication rates and direct hospital costs are higher, laparoscopic hysterectomy is not cost effective compared with vaginal hysterectomy.[98] [99] Its cost effectiveness relative to abdominal hysterectomy is finely balanced.[99] Due to rising costs, patients from the more industrialized countries, where myomectomy and hysterectomy are expensive procedures, are beginning to avail themselves of surgical tourism at a reduced cost abroad in less affluent countries, which although having less financial resources in general, have well trained and experienced gynecologic surgeons working in hospitals that have adequate facilities to carry out major surgeries.[100] [101] Laparoscopic equipment, technologies, and the level of training of junior surgical staff are continuing to improve at a steady pace and will undoubtedly play larger roles in lower resource settings in the future.

Although the proportion of hysterectomies performed abdominally is quite high in the United Kingdom (67%)[90] and in the United States (63%),[102] this is reversed in centers with experienced vaginal surgeons, where up to 90% of hysterectomies are performed vaginally in some centers.[103] [104] The vaginal route is the most cost-effective technique of carrying out a hysterectomy,[98] [99] [105] and it has even been performed as an outpatient procedure.[106] Vaginal hysterectomy can be performed in women without a previous vaginal delivery, with a history of previous cesarean delivery, with enlarged uteri, in morbidly obese women, and in those requiring removal of adnexae.[107] [108] The vaginal route is recommended for straightforward hysterectomy in most countries.

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Hysterectomy improves the quality of life in women with AUB and does not lead to serious long-term morbidity.[**109**] [**110**] Vaginal hysterectomy is currently being effectively performed in many low-resource settings,[**101**] [**103**] [**111**] [**112**] and it should be recommended as the preferred type of hysterectomy in low-resource settings. Although hysterectomy is an effective therapy for HMB and has important advantages in low-resource settings, there is increasing evidence for a steady reduction in the numbers of hysterectomies performed for AUB in settings where the LNG-IUS is widely available.[**113**] This appears to be a trend that is likely to continue.

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CONCLUSION

The management principles for AUB are similar in both low-and high-resource settings, but the tools, techniques, and training may be very different. In many non industrialized countries the middle class of the population is steadily increasing and becoming more affluent, and hence many of these countries have medical facilities—clinics and hospitals—where the disparity between "low- and high-resource" settings is very large. These countries face a huge challenge in addressing entrenched cultural beliefs, in recognizing the devastating effect that HMB and severe anemia can have on the health of women and the well-being of their families, and in developing relevant health management programs, adequately resourced to offer therapeutic choices to those who are most disadvantaged.

Specialist medical and gynecologic societies have a challenging advocacy role to identify and highlight the social and clinical impact of HMB and anemia in their communities, to develop locally relevant guidelines for investigation, management and prevention of HMB and anemia in their lowest resource settings, and to ensure that their health authorities take notice.

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