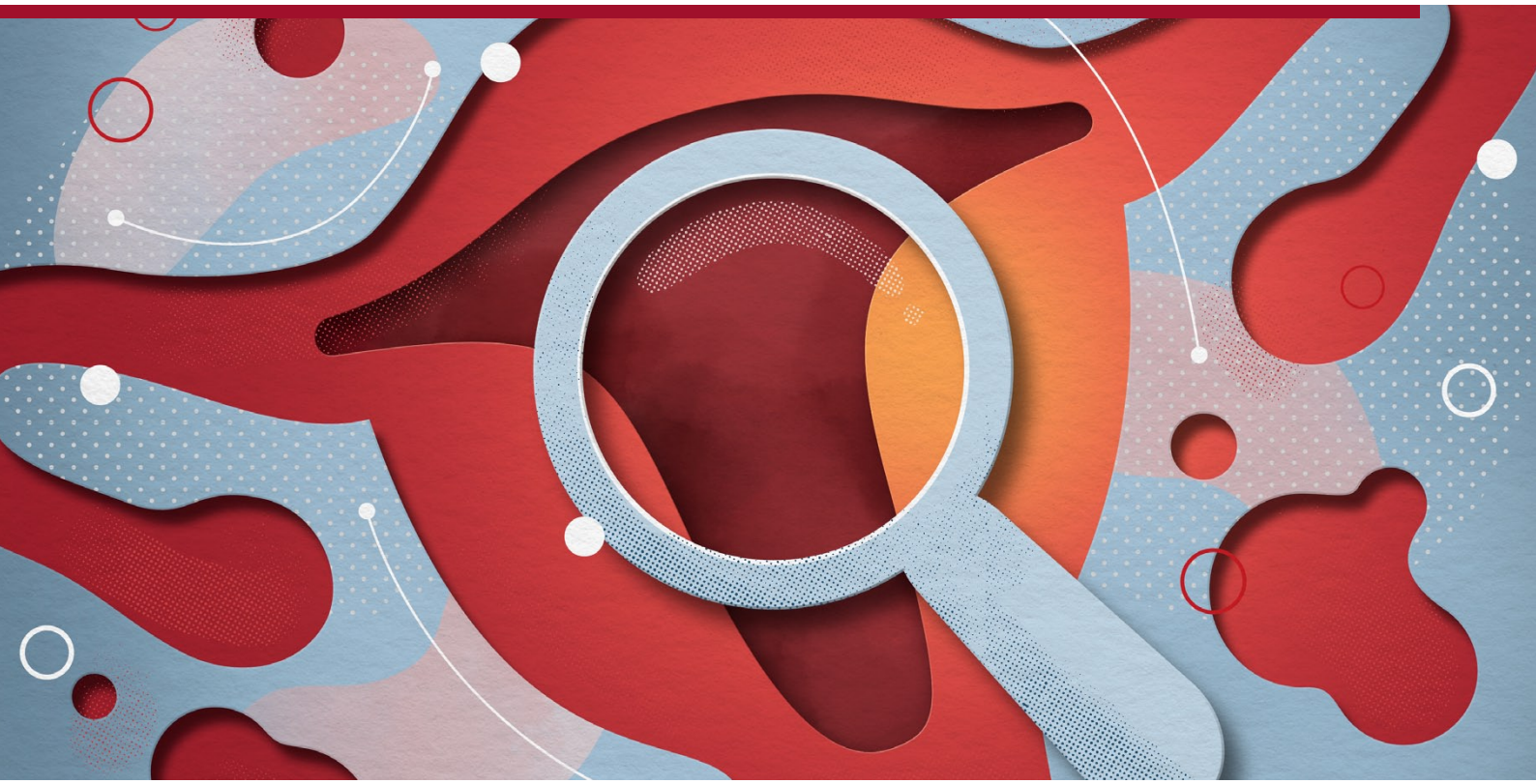


Investigating and managing abnormal vaginal bleeding: an overview

Abnormal vaginal bleeding has many potential causes, ranging from anovulatory cycles to malignancy. The type of bleeding, e.g. heavy menstrual bleeding, intermenstrual or unscheduled, post-coital or post-menopausal bleeding, can help to identify the most likely cause, and therefore the appropriate management strategy.

Vaginal bleeding: likely sources and common causes

Establishing the source of bleeding is an essential first step when assessing women* who present with *per vaginum* (PV) bleeding. Often the source of bleeding is the uterus, however, bleeding from other parts of the genital tract (e.g. vulva, vagina or cervix) must also be considered. Bleeding from the urinary or gastrointestinal tracts may be mistaken by patients for PV bleeding and should be excluded.

Abnormal bleeding from the uterus can be caused by a wide variety of local and systemic conditions, or it can be related to medicines use. Anovulatory cycles, pregnancy, menopause, structural abnormalities (e.g. fibroids, polyps, adenomyosis, uterine prolapse), bleeding disorders and malignancy are all possible causes of abnormal uterine bleeding. Causes of lower genital tract bleeding include infection, trauma, urogenital atrophy or malignancy.

An added complexity when trying to determine the cause of abnormal bleeding is that in some cases there may be more than one cause and in other cases an abnormality may be found, but it is not the cause of the bleeding. By working logically through the history, clinical examination and requesting the appropriate laboratory and imaging tests, clinicians can establish the cause of bleeding, and whether management in primary care is appropriate or referral to secondary care is indicated.

* The term "women" is used to describe the patient population who are most likely to present with abnormal PV bleeding, however, we acknowledge that this may not reflect the identity of the patient; girls, adolescents, transgender boys or men, and non-binary individuals may present with abnormal PV bleeding.

A Goodfellow podcast with Dr Anil Sharma on abnormal uterine bleeding is available from: **www.goodfellowunit.org/podcast/abnormal-uterine-bleeding-dr-anil-sharma**

Bleeding type can be used to guide the differential diagnosis

Any bleeding that is outside of the expected norms, as determined by the patient's age or reproductive status, can be considered abnormal (see: "Normal and abnormal menstrual bleeding patterns"). The type of abnormal bleeding, e.g. heavy menstrual bleeding, intermenstrual or unscheduled, post-coital or post-menopausal bleeding, can be used to help identify the most likely cause, and therefore the appropriate management strategy. This also includes instances where the abnormality is the absence of bleeding (see: "Investigating infrequent or absent menstrual cycles"). In most cases, it will be appropriate to first exclude pregnancy as the cause of abnormal PV bleeding, unless the patient is of menopausal age and their last menstrual period was > 12 months ago. Haemorrhagic PV bleeding would typically be managed in an emergency secondary care setting.

N.B. The management of abnormal PV bleeding in pregnancy is not discussed further.

Taking a focused history is the first step

Aspects to consider when a woman presents with abnormal PV bleeding should include:

- Age
- Menstrual bleeding patterns, i.e. frequency, duration, regularity and flow volume (see: "Normal and abnormal menstrual bleeding patterns")
- Characteristics and timing of bleeding, e.g. post-coital, intermenstrual, unscheduled* (in women using hormonal contraception), following urination or defecation, post-menopausal
- Associated symptoms such as discomfort or pain, pruritis, discharge or dyspareunia
- Use of any prescription or over-the-counter products, including:[1]
  - Hormonal contraception
  - Menopausal hormone therapy
  - Anticoagulants
  - Tamoxifen
  - Antipsychotics
  - Herbal products, e.g. soya, gingko, ginseng
- Sexual health history, e.g. are they sexually active, do they have one or multiple sexual partners, are their sexual partners male, female or both
- Obstetric history
- Surgical history
- Symptoms arising from systemic disease, e.g. easy bruising, epistaxis, bleeding gums that could suggest a bleeding disorder

* Also referred to as breakthrough bleeding

N.B. Some patients may have abnormalities in both the menstrual bleeding pattern and the characteristics and timing of bleeding.

The physical examination will be guided by the history

Physical examination of a woman with abnormal PV bleeding will vary depending on factors such as her age, type of bleeding, and other symptoms or signs. An examination may include:

- A general physical assessment including weight, blood pressure and pulse rate
- Assessment for signs suggestive of an underlying condition, for example:[4]
  - Thyroid nodule or goitre – thyroid disease
  - Acne, hirsutism, androgenic alopecia – polycystic ovary syndrome
  - Galactorrhoea – hyperprolactinaemia
  - Ecchymosis and petechiae – coagulation disorder
- Abdominal examination – to exclude any masses palpable abdominally
- Pelvic examination* – examination of the external genitalia, speculum examination of the vagina and cervix, and bimanual examination of the uterus to assess its size and detect any structural abnormalities

* May not be necessary for younger patients or for those with abnormal bleeding that has an obvious cause, e.g. related to hormonal contraception.

Heavy menstrual bleeding

Heavy menstrual bleeding can be described as a bleeding volume that interferes with a woman's quality of life.[5] In some sources this is defined as a menstrual blood loss volume of ≥ 80 mL per cycle, compared to a normal loss of 30 to 40 mL per cycle.[3, 6] Proxy measurements of heavy bleeding may be reported by the patient as having to change sanitary products every one to two hours, needing to use two types of sanitary product together, bleeding through clothes or onto bedding, or the passage of blood clots.

Common aetiologies of heavy menstrual bleeding can be grouped into the following categories:[2, 7]

- Causes related to uterine structure:
  - Fibroids
  - Polyps
  - Adenomyosis
  - Endometrial cancer or hyperplasia
- Causes not related to uterine structure:
  - Iatrogenic, e.g. copper intrauterine device, tamoxifen, depot medroxyprogesterone acetate, menopausal

hormone therapy (MHT), anticoagulants, aspirin, some herbal supplements

- Ovulatory dysfunction, e.g. psychological stress, weight gain or loss, excessive exercise, polycystic ovary syndrome, thyroid disease
- Coagulation disorders, e.g. von Willebrand disease
- Endometrial disorders,* e.g. deficiencies in vasoconstrictors (e.g. endothelin-1, prostaglandin F1a) and excessive production of plasminogen, endometritis

There may be other causes that do not fit into these classifications, e.g. caesarean scar defect (isthmocele), arteriovenous malformations, endometrial pseudoaneurysms, myometrial hypertrophy.[2]

* These are due to primary dysfunction of local endometrial homeostasis; the aetiology is not completely defined.[7] Women present with predictable and cyclic menses, suggestive of normal ovulation, but they have heavy menstrual bleeding.[7]

Laboratory and imaging tests that may be indicated when investigating heavy menstrual bleeding include:

- Urine pregnancy test,* serum hCG if required
- Complete blood count – recommended for all patients with heavy menstrual bleeding.[5] Guidelines recommend against routinely including ferritin;[5] in practice, however, it may often be appropriate to add this test, e.g. if bleeding has been ongoing or there are other factors contributing to iron deficiency such as diet.
- Thyroid stimulating hormone (TSH) – if there are other symptoms or signs of thyroid disease[5]
- Coagulation† and liver function tests – if the history is suggestive of haemostatic defect, e.g. frequent nosebleeds, easy bruising, heavy menstrual bleeding from menarche, family history of a coagulation disorder.[8] Test for von Willebrand disease if there is positive family history and in adolescents or young adults with heavy menstrual bleeding.
- Pipelle biopsy – to sample the endometrium to rule out hyperplasia or malignancy
- Pelvic ultrasound** (including endometrial thickness) – if a structural cause of heavy menstrual bleeding is suspected

* A positive urine pregnancy test is possible on the first day of a missed period, however, delaying the test decreases the likelihood of a false-negative result. Alternatively, the patient can repeat the test at home if pregnancy is suspected.

† Prothrombin time [PT], international normalised ratio [INR], activated partial thromboplastin time [APTT] and fibrinogen

** This usually includes transvaginal ultrasound

Normal and abnormal menstrual bleeding patterns

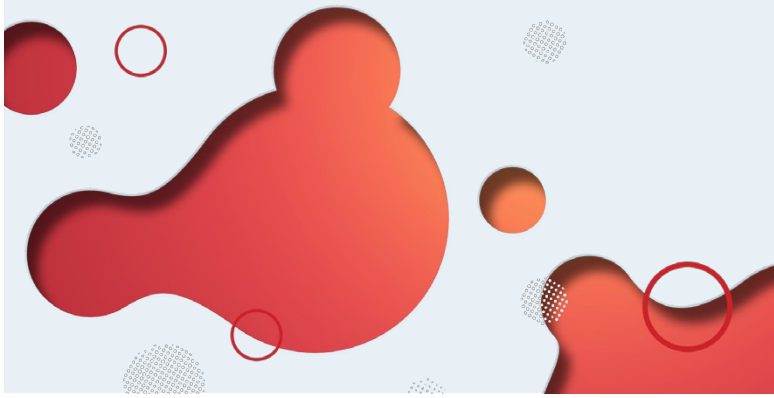
Any uterine bleeding that is outside of the normal menstrual patterns in terms of the frequency, volume, regularity or duration* of bleeding is considered abnormal (Table 1).

* Terms such as menorrhagia, metrorrhagia, oligomenorrhea and dysfunctional uterine bleeding are no longer recommended by the International Federation of Gynecology and Obstetrics Menstrual Disorder Committee due to confusing and poorly defined usage.[2]

Table 1. Classification of menstrual bleeding patterns[2, 3]

Parameter	Terminology	Definition
Frequency	Absent	No bleeding (amenorrhoea)
	Infrequent	> 38 days
	Normal	≥ 24 days to ≤ 38 days
	Frequent	< 24 days
Duration	Normal	≤ 8 days
	Prolonged	> 8 days
Regularity	Regular	Cycle length (shortest to longest) varies by ≤ 7–9 days
	Irregular	Cycle length varies by ≥ 8–10 days
Flow volume*	Light	Subjective
	Normal	
	Heavy	

* Some sources define heavy flow as a menstrual blood loss volume of ≥ 80 mL per cycle, compared to a normal loss of 30 to 40 mL per cycle.[3, 6] As precise measurements are usually not possible, volume of bleeding is determined subjectively by the patient.



Key messages for heavy menstrual bleeding:

- Structural causes of heavy menstrual bleeding become more common with increasing age; fibroids, polyps, adenomyosis and malignancy are rare causes of heavy menstrual bleeding in those aged < 40 years – although there are some parts of the country where there is a high incidence of malignancy in younger women (see: "Risk factors for endometrial cancer or hyperplasia").[9] Ultrasound investigation, pipelle biopsy or hysteroscopy are necessary to diagnose structural abnormalities or malignancy.
- Heavy menstrual bleeding associated with small fibroids, e.g. < 3 cm, can generally be managed in primary care with pharmacological treatments (Table 2).[5] Women with larger fibroids that cause significant uterine enlargement or cavity distortion, or endometrial polyps should be referred for gynaecology assessment.
- Heavy menstrual bleeding from menarche can indicate an underlying coagulation disorder. If testing indicates coagulopathy, refer the patient to or discuss treatment with a haematologist.[8]
- Anovulatory cycles in peri-menopause* can cause heavy menstrual bleeding.[10] However, structural causes should be excluded using ultrasound investigation.
- A variety of hormonal and non-hormonal pharmacological treatment options are available to manage heavy menstrual bleeding (Table 2). Treatment selection will be influenced by the cause of bleeding, the need for contraception, any contraindications to oestrogen or progestogen use, and patient preference.
- Surgical treatments, e.g. endometrial ablation or hysterectomy, may be considered if pharmacological management strategies are ineffective

* Peri-menopause begins with the onset of cycle irregularity and ceases one year after the last menses.[10]

Intermenstrual or unscheduled bleeding

Intermenstrual bleeding is any cyclic or random bleeding between menstrual periods.[2] Unscheduled bleeding (also referred to as breakthrough bleeding) is bleeding outside of the expected time of the withdrawal bleed in women using hormonal contraception or MHT.[2]

Common causes of intermenstrual or unscheduled bleeding include:[18]

- Ovulation
- Sexually transmitted infections (STIs), particularly chlamydia or gonorrhoea
- Endometrial or cervical polyps
- Use of progestogen-only contraceptives
- Endometrial hyperplasia or malignancy
- Caesarean scar defect (isthmocele)

Laboratory and imaging tests that may be indicated when investigating intermenstrual or unscheduled bleeding include:

- Urine pregnancy test, serum hCG if required
- STI testing
- Cervical smear testing – if the last cervical smear test was more than 6–12 months ago
- Pelvic ultrasound (including endometrial thickness) – if intermenstrual bleeding is persistent or the bimanual examination reveals any abnormalities

Risk factors for endometrial cancer or hyperplasia

Risk factors for endometrial cancer or hyperplasia in women presenting with abnormal PV bleeding include:

- Age > 45 years*
- Age > 35 with one or more of the following:
  - Body mass index (BMI) ≥ 30 kg/m^2
  - Diabetes
  - Hypertension
  - Exposure to unopposed oestrogen, e.g. due to menopausal hormone therapy (MHT)
  - Nulliparity, infertility, polycystic ovary syndrome
  - Māori or Pacific ethnicity
  - Family history of endometrial, colorectal†, small intestine, ureter or renal cancer
- Taking tamoxifen

* In some parts of the country, e.g. Counties Manukau, there is a high incidence of endometrial cancer and hyperplasia. Women aged > 35 years and those with BMI > 30 kg/m^2 are considered to be at high risk. Refer to the local Health Pathway for region-specific information.

† Females with Lynch syndrome are at high risk of endometrial hyperplasia and malignancy

Table 2. Pharmacological treatment options for patients with persistent heavy menstrual bleeding*

Treatment		Recommendations
Hormonal	**52 mg levonorgestrel intrauterine system (LIUS)**, i.e. Mirena†	This is the first choice for women with heavy menstrual bleeding who also require long-term contraception (up to five years).[5] LIUS reduce menstrual bleeding and one-half to two-thirds of patients report lighter and less frequent bleeding within three months of use.[11] For further information on LIUS, see: **www.bpac.org.nz/2019/contraception/long-acting.aspx**
	Combined oral contraceptive (COC)	This option may be preferred by women who want to become pregnant in the near future. Contraindications to COC use include current or past venous thromboembolism, thrombogenic mutation, multiple cardiovascular disease risk factors, migraine with aura and breast cancer. Select a COC containing 30–35 micrograms ethinylestradiol as these are more likely to stabilise the endometrium than lower dose formulations.[8] If this is not effective, try 50 micrograms ethinylestradiol, however, this should be used for the shortest possible duration due to increased risk of adverse effects with higher doses of oestrogen. Consider an extended or continuous regimen to avoid heavy withdrawal bleeding in the hormone-free interval. For further information on prescribing COCs, including when use is contraindicated or cautioned, see: **www.bpac.org.nz/2019/contraception/oral-contraceptives.aspx**
	Progestogen-only contraceptives, e.g. depot medroxyprogesterone acetate (DMPA) injection or progestogen-only pill (POP)	DMPA injections are likely to cause changes in bleeding pattern such as amenorrhoea, irregular bleeding or spotting, or prolonged bleeding.[12] Amenorrhoea becomes more likely as the duration of use increases. DMPA use is associated with a delay in return to fertility and is therefore not preferable for women who want to become pregnant in the near future or shortly after stopping contraceptives.[12] For further information on DMPA, see: **www.bpac.org.nz/2019/contraception/depot.aspx** A POP may be preferred by women with contraindications to oestrogen use who do not wish to have a delay in the return to fertility. However, bleeding patterns associated with POP use can be unpredictable and may not settle over time.[13] The desogestrel-only formulation (Cerazette) consistently inhibits ovulation and may improve bleeding in some women, however, this POP is not funded.[13] For further information on POPs, see: **www.bpac.org.nz/2019/contraception/oral-contraceptives.aspx**
	Cyclical progestogens, i.e. medroxyprogesterone acetate or norethisterone	Cyclical progestogens may be preferred by women with contraindications to oestrogen use who do not wish to take a progestogen continuously. Cyclical progestogen regimens are less effective at reducing menstrual blood loss than other treatment options, e.g. LIUS, COC and tranexamic acid.[14] Cyclical progestogen regimens do not provide contraception. Give either medroxyprogesterone acetate (starting at 10 mg once a day) or norethisterone (starting at 5 mg twice a day) from day 5 to day 25 of the cycle. N.B. at this dose norethisterone has similar contraindications to use as COCs.[15] If spotting occurs, double the dose. If spotting ceases and the patient experiences progestogenic adverse effects, consider reducing back to the starting dose.
Non-hormonal	**Tranexamic acid**	1 g, three times daily, for up to 4 days; initiate when menstruation begins (maximum 4 g daily)[16, 17] N.B. Concurrent use of tranexamic acid and a COC may result in additive effects on VTE risk and should be avoided.[16] See the NZF for further information on cautions and contraindications to tranexamic acid use: **www.nzf.org.nz/nzf_1581**
	NSAIDs	Mefenamic acid (partly funded) is indicated for the treatment of heavy menstrual bleeding. The recommended regimen is 500 mg, three times daily.[16, 17] Advise the patient to start either just before or at the earliest onset of menses and continue to take regularly every six to eight hours for the first three to four days of the cycle.

* Choice will be influenced by various factors including the patient's age, body mass index, smoking history, previous use of hormonal contraceptive options and personal preference

† From 1 November, 2019, changes to the access criteria of LIUS mean that these can now be prescribed fully funded without Special Authority restrictions. Patients will still need to cover the costs for insertion of the devices, and associated appointment fees, unless they are eligible for a subsidised or no-cost insertion. A standard prescription fee will usually apply at the pharmacy. For further information see: **www.bpac.org.nz/2019/iud.aspx**

Key messages for intermenstrual or unscheduled bleeding:

- Some women may experience light intermenstrual spotting or bleeding around the time of ovulation; if the history and examination do not suggest risk of infection or cervical pathology, further investigation may not be immediately required.[18]
- Ideally, all sexually active women who have intermenstrual or unscheduled bleeding should have a speculum examination to check for any skin lesions, rashes, ulceration* and vaginal or cervical discharge
- Ask women with unscheduled bleeding about their adherence to their oral contraceptive or MHT regimen and if they are using any other medicines or over-the-counter products as these could affect the absorption of oral medicines
- If intermenstrual bleeding is persistent, perform a cervical smear test and refer for pelvic ultrasound. If the results are abnormal, refer for gynaecology assessment.[18]
- Management of unscheduled bleeding will depend on the type of contraceptive:[19]
  - For women using a COC, consider increasing the dose of ethinylestradiol (to a maximum of 35 micrograms) and/or changing the type of progestogen
  - If the woman is taking a COC continuously and unscheduled bleeding persists for three to four days, the pill should be stopped for four days and then resumed
  - Unpredictable bleeding patterns are more common in women using progestogen-only contraception; problematic bleeding does not always settle over time

* Syphilis chancres (large, usually painless ulcers) can occur on or around the external genitalia, inside the vagina or on the cervix. Serology is required to diagnose syphilis and should be routinely included in STI testing. For further information, see: **www.bpac.org.nz/2019/syphilis.aspx**

For information on managing bleeding associated with hormonal contraception, see: **https://bpac.org.nz/2019/contraception/options.aspx** and **www.fsrh.org/standards-and-guidance/documents/ceuguidanceproblematicbleedinghormonalcontraception/**

From 1 November, 2019, the starting age for the National Cervical Screening Programme changed from 20 years to 25 years. Cervical cancer in women aged < 25 years is rare and the evidence suggests that screening does not prevent cervical cancer in this age group. Cervical smear testing in women aged < 25 years presenting with abnormal PV bleeding may be indicated, depending on the history and pelvic examination findings. For further information see: **www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/age-range-change-cervical-screening-0**

Post-coital bleeding

Post-coital bleeding is defined as any bleeding in the 24 hours following vaginal intercourse. There are a range of causes, including:

- STIs, e.g. chlamydia or gonorrhoea infection
- Cervical ectropion or polyps
- Atrophic vaginitis
- Cervical cancer
- Vaginal cancer
- Trauma

Laboratory and imaging tests that may be indicated when investigating post-coital bleeding include:

- Urine pregnancy test, serum hCG if required
- STI testing – recommended regardless of risk assessment
- Cervical smear test – if the last cervical smear test was more than 6–12 months ago
- Pelvic ultrasound – if the bimanual examination reveals any abnormalities

Key messages for post-coital bleeding:

- Generally, a single episode of post-coital bleeding in a woman with a normal cervical appearance and cervical smear results does not immediately warrant further investigation of cervical pathology[18]
- Atrophic vaginitis is common in post-menopausal women and can be managed using vaginal moisturisers, lubricants or topical vaginal oestrogens
- It is recommended that cervical polyps be removed. Cervical polyps < 1.5 cm can be removed in primary care and sent for histological examination; if polyps are > 1.5cm, refer for gynaecology assessment
- If the uterus is enlarged or a pelvic mass of unknown origin is detected on bimanual examination, refer for pelvic ultrasound
- Women with persistent or recurrent post-coital bleeding, an abnormal cervical, vaginal or vulval appearance, or an abnormal cervical smear result should be referred for colposcopy

Post-menopausal bleeding

Post-menopausal bleeding is defined as any bleeding that occurs after 12 months or more of menopausal amenorrhoea.[20] Post-menopausal bleeding is a red flag for endometrial cancer and this must be excluded as the cause of post-menopausal bleeding with high priority.

Diagnostic and imaging tests that may be indicated when investigating post-menopausal bleeding include:

- Cervical smear test – if the last cervical smear test was more than 6–12 months ago*
- STI testing as indicated by risk
- Pipelle biopsy – to sample the endometrium to rule out hyperplasia or malignancy
- Pelvic ultrasound – an exception may be those who have recently initiated MHT
- Hysteroscopy – for women with post-menopausal bleeding who are taking tamoxifen

* The National Cervical Screening Programme stops at age 69 years, however, some women may continue to have them after age 70 years, depending on clinical circumstances and personal preference.

Key messages for post-menopausal bleeding:

- The most common cause of post-menopausal bleeding is endometrial or vaginal atrophy (60–80%), followed by menopausal hormone therapy (MHT) (15–25%), endometrial or cervical polyps (2–12%), endometrial hyperplasia (10%), endometrial cancer (10%), cervical cancer (< 1%)[20]
- All women who present with post-menopausal bleeding who have not recently initiated MHT should be referred for pelvic ultrasound with high priority (i.e. within two to four weeks). If the woman is taking tamoxifen, refer for hysteroscopy and pelvic ultrasound.
- Bleeding after six months of continuous MHT or unscheduled bleeding in women taking cyclical MHT should be investigated with pelvic ultrasound
- If there is a high suspicion of endometrial cancer, arrange a pipelle biopsy while awaiting the ultrasound results
- Post-menopausal bleeding caused by atrophic vaginitis can be managed with vaginal moisturisers, lubricants or topical vaginal oestrogens. If the woman has had breast cancer, discuss with a relevant specialist in secondary care.

Further information on managing bleeding associated with MHT will be available in an upcoming article.

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N.B. Expert reviewers are not responsible for the final content of the article.

Investigating infrequent or absent menstrual cycles

Infrequent menstrual cycles are defined as > 38 days between menstrual cycles.[2] Amenorrhoea (absence of menstrual cycles) may be classified as primary or secondary:[21]

- **Primary amenorrhoea** is the failure to reach menarche. The absence of pubertal development by age 13 years, absence of menses by five years after initial breast development, or the absence of menses by age 15 years should be investigated.
- **Secondary amenorrhoea** is the cessation of regular menses for more than three months or the cessation of irregular menses for more than six months

Key messages:

- The most common cause of primary amenorrhoea in a girl with no secondary sexual characteristics is a constitutional delay in growth and puberty. If there is no obvious cause, e.g. anorexia, watchful waiting may be the most appropriate course.
- The most common cause of secondary amenorrhoea is pregnancy. Other causes of infrequent or absent menstrual cycles include anovulatory cycles, polycystic ovary syndrome or functional anovulation, e.g. excessive exercise, eating disorder, stress, some medicines. Thyroid disease and hyperprolactinaemia are less common causes.
- Infrequent menstruation following menarche is usually due to anovulatory cycles and hypothalamic-pituitary-ovarian axis immaturity.[22] This often settles into a normal pattern within two to three years.[22] Menstrual cycles may also become infrequent in peri-menopause due to anovulation.
- Consider primary ovarian insufficiency in women aged < 40 who present with menstrual irregularities and menopausal symptoms
- Treatment will depend on the underlying cause; referral to secondary care may be indicated in some cases, e.g. women with hyperprolactinaemia or hyperthyroidism

Further information on diagnosing and managing primary ovarian insufficiency will be available in an upcoming article.

References

1. Wouk N, Helton M. Abnormal uterine bleeding in premenopausal women. Am Fam Physician 2019;99:435–43.
2. Munro MG, Critchley HOD, Fraser IS, et al. The two FIGO systems for normal and abnormal uterine bleeding symptoms and classification of causes of abnormal uterine bleeding in the reproductive years: 2018 revisions. Int J Gynecol Obstet 2018;143:393–408. doi:10.1002/ijgo.12666
3. Fraser I, Critchley H, Broder M, et al. The FIGO recommendations on terminologies and definitions for normal and abnormal uterine bleeding. Semin Reprod Med 2011;29:383–90. doi:10.1055/s-0031-1287662
4. Khafaga A, Goldstein SR. Abnormal uterine bleeding. Obstetrics and Gynecology Clinics of North America 2019;46:595–605. doi:10.1016/j.ogc.2019.07.001
5. National Institute for Health and Care Excellence. Heavy menstrual bleeding: assessment and management. 2018. Available from: https://www-nice-org-uk.ezproxy.otago.ac.nz/guidance/ng88/chapter/Recommendations#investigations-for-the-cause-of-hmb (Accessed Oct, 2019).
6. Mohan S, Page L, Rusman V, et al. Menorrhagia: recommended treatments in primary care. Prescriber 2009;20:37–48. doi:10.1002/psb.502
7. Marnach ML, Laughlin-Tommaso SK. Evaluation and management of abnormal uterine bleeding. Mayo Clin Proc 2019;94:326–35. doi:10.1016/j.mayocp.2018.12.012
8. American College of Obstetricians and Gynecologists. ACOG committee opinion: Screening and management of bleeding disorders in adolescents with heavy menstrual bleeding. 2019. Available from: https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Adolescent-Health-Care/Screening-and-Management-of-Bleeding-Disorders-in-Adolescents-With-Heavy-Menstrual-Bleeding?IsMobileSet=false (Accessed Oct, 2019).
9. Hapangama DK, Bulmer JN. Pathophysiology of heavy menstrual bleeding. Womens Health (Lond Engl) 2016;12:3–13. doi:10.2217/whe.15.81
10. American College of Obstetricians and Gynecologists. Practice bulletin no. 136: management of abnormal uterine bleeding associated with ovulatory dysfunction. Obstet Gynecol 2013;122:176–85. doi:10.1097/01.AOG.0000431815.52679.bb
11. Diedrich JT, Desai S, Zhao Q, et al. Association of short-term bleeding and cramping patterns with long-acting reversible contraceptive method satisfaction. Am J Obstet Gynecol 2015;212:50.e1-8. doi:10.1016/j.ajog.2014.07.025
12. Faculty of Sexual and Reproductive Healthcare. FSRH clinical guidance: progestogen-only injectable contraception. 2014. Available from: www.fsrh.org/standards-and-guidance/documents/cec-ceu-guidance-injectables-dec-2014/ (Accessed Feb, 2019).
13. Faculty of Sexual and Reproductive Healthcare. Clinical Effectiveness Unit guidance. Progestogen only pills. 2015. Available from: www.fsrh.org/documents/ceuguidanceprogestogenonlypills/ (Accessed Jan, 2019).
14. Bofill Rodriguez M, Lethaby A, Low C, et al. Cyclical progestogens for heavy menstrual bleeding. Cochrane Database of Systematic Reviews 2019; [Epub ahead of print]. doi:10.1002/14651858.CD001016.pub3
15. Mansour D. Safer prescribing of therapeutic norethisterone for women at risk of venous thromboembolism. J Fam Plann Reprod Health Care 2012;38:148–9. doi:10.1136/jfprhc-2012-100345
16. New Zealand Formulary (NZF). NZF v90. 2019. Available from: www.nzf.org.nz (Accessed Nov, 2019).
17. New Zealand Formulary for Children. NZFC v67. 2018. Available from: www.nzfchildren.org.nz/ (Accessed Feb, 2017).
18. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Investigation of intermenstrual and postcoital bleeding. 2018. Available from: https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical%20-%20Gynaecology/Investigation-of-intermenstrual-and-postcoital-bleeding(C-Gyn-6)-March-2018.pdf?ext=.pdf (Accessed Oct, 2019).
19. Faculty of Sexual and Reproductive Healthcare. Clinical Effectiveness Unit guidance. Problematic bleeding with hormonal contraception. 2015. Available from: www.fsrh.org/documents/ceuguidanceproblematicbleedinghormonalcontraception/ (Accessed Feb, 2019).
20. Brand A. The woman with postmenopausal bleeding. Aust Fam Physician 2007;36:116–120.
21. Klein DA, Paradise SL, Reeder RM. Amenorrhea: A systematic approach to diagnosis and management. Am Fam Physician 2019;100:39–48.
22. American College of Obstetricians and Gynecologists. ACOG committee opinion: Management of acute abnormal uterine bleeding in nonpregnanct reproductive-aged women. 2013. Available from: https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Gynecologic-Practice/Management-of-Acute-Abnormal-Uterine-Bleeding-in-Nonpregnant-Reproductive-Aged-Women?IsMobileSet=false (Accessed Oct, 2019).

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