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Oleka, Chimsom T, Anderson, Travis , Ackerman, Kathryn E , Elliott-Sale, Kirsty J , Kraus, Emily , Casey, Ellen , Stellingwerff, Trent , Donaldson, Amber T, Finnoff, Jonathan T, Post, Eric G  and Adams, William M  (2024) An update to terminology describing abnormal uterine bleeding in female athletes: facilitating cross-disciplinary health care. *British Journal of Sports Medicine*. ISSN 0306-3674

**DOI:** <https://doi.org/10.1136/bjsports-2024-108261>

**Publisher:** BMJ

**Version:** Accepted Version

**Downloaded from:** <https://e-space.mmu.ac.uk/635819/>

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**Additional Information:** This article has been accepted for publication in *British Journal of Sports Medicine*, 2024, following peer review, and the Version of Record can be accessed online at <http://dx.doi.org/10.1136/bjsports-2024-108261> © Authors (or their employer(s)).

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1 **Editorial Title:** An Update to Terminology Describing Abnormal Uterine Bleeding in Female Athletes:  
2 Facilitating Cross-Disciplinary Health Care

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31 **Acknowledgments:** This work is the author's own and not that of the United States Olympic &  
32 Paralympic Committee or any of its members or affiliates.

33 **Text Word Count:** 978

34 **Tables (#):** 1

35 **Figures (#):** 0

36 **References (#):** 7

37 Female athlete health, performance, and well-being are best supported by a comprehensive team  
38 of medical providers and sports scientists that may include physicians from various specialties, allied  
39 health providers, exercise and sports scientists, mental health professionals, and dietitians. Understanding  
40 and consistently utilizing contemporary terminology in research and clinical practice is critical to ensure  
41 precise communication and facilitate effective cross-disciplinary health care. This editorial aims to  
42 highlight current standardized terminology for describing abnormal menstrual bleeding in order to  
43 promote consistency in terminology across sports and exercise science and medicine (SESM).

44 While there has been a recent increase in female athlete research, including studies investigating  
45 the influence of the menstrual cycle on athletic performance and health (1), there is a clear absence of  
46 standardized menstrual cycle language and classification due to the persistent use of outdated abnormal  
47 uterine bleeding (AUB) nomenclature. Indeed, previous research and clinical investigation and  
48 management of AUB among non-pregnant women of reproductive age was hindered by inconsistently  
49 applied nomenclature and lack of standardized categorization of potential etiologies (2–5). This ambiguity  
50 poses several problems, including the inability to homogeneously classify research participants  
51 experiencing AUB, difficulty comparing studies, and significantly undermining the investigative leverage  
52 of meta-analyses due to increased risk of inaccurate conclusions, as well as clinical implications (e.g.,  
53 ambiguous diagnoses, less precise clinical care and management, and confusing communication across  
54 the medical team). Such concerns led to the development of a universally accepted nomenclature and  
55 classification system within the gynecological and obstetrics medical field ~20 years ago that is practical  
56 and appropriate for research, education, and clinical needs. However, within the past 10 years,  
57 publications across various medical and applied and basic science journals from fields such as sports  
58 medicine, psychology, public health, and others have used outdated terms with little adoption of updated  
59 language.

#### 60 **Abnormal Uterine Bleeding (AUB) Nomenclature**

61 Recognizing the international need for AUB classification harmonization, the International  
62 Federation of Gynecology and Obstetrics (FIGO) developed a system to define normal and abnormal  
63 bleeding symptoms. It recommended classifications for the causes of AUB, reaching international  
64 consensus in 2011 and updating in 2018 to facilitate research, education, and clinical care (6,7). This  
65 terminology has been helpful in evolving collaborative research and applying evidence-based results to  
66 clinical practice (6). Readers are directed to Figure 1 in Munro et al. (7) for such definitions. Several key  
67 points from the classification system are highly relevant to sports medicine clinicians and SESM  
68 researchers.

69 Firstly, AUB was deemed a suitable overarching term for the symptom of disturbed menstrual  
70 bleeding, not restricted to just abnormally heavy menstrual bleeding but including bleeding that was  
71 abnormal in timing. The previous terminology was either discarded or replaced with the recognition of

72 disparate usage and inconsistent meaning for the clinical, academic, and general communities (6). See  
73 Table 1 for updated terminology and definitions.

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INSERT TABLE 1 ABOUT HERE

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77 Secondly, the following general sources of bleeding were considered in the approved FIGO  
78 classification system: 1) Primary disorders of the endometrium that most often manifest as disturbances  
79 of local endometrial hemostasis but may also include other entities such as altered vasculogenesis or local  
80 inflammatory response abnormalities; 2) Endometrial polyps; 3) Leiomyomas (fibroids); 4)  
81 Adenomyosis; 5) Disorders of ovulatory function; 6) Systemic disorders of hemostasis known as  
82 coagulopathies; 7) Malignant and premalignant conditions; 8) Iatrogenic causes including gonadal steroid  
83 administration; 9) Other local lesions or systemic conditions that may be rare causes of AUB (e.g.,  
84 arteriovenous malformations and myometrial hypertrophy) or those that can sometimes cause abnormal  
85 bleeding (e.g., endometriosis). Importantly, these FIGO classification systems relate solely to assessing  
86 and managing non-gestational AUB. In addition, there are other causes of genital, urinary, or  
87 gastrointestinal tract bleeding that do not originate from the uterus (6).

88 It was envisioned that the most straightforward components of the classification system would be  
89 used in primary medical care, and sub-classifications would be most relevant in specialist clinical and  
90 research settings.(6) The classification system of AUB causes in the reproductive years is comprised of  
91 nine main categories that are arranged according to the acronym PALM-COEIN (pronounced “pahm-  
92 koin”): polyp; adenomyosis; leiomyoma; malignancy and hyperplasia (PALM); coagulopathy; ovulatory  
93 dysfunction; endometrial; iatrogenic; and not otherwise classified (COEIN). Generally, the PALM group  
94 consists of discrete (structural) components that can be visually measured using imaging techniques or  
95 histopathology (6). In contrast, the COEIN group is associated with entities not characterized by imaging  
96 or histopathology, falling into the non-structural category (6). The system was constructed with the  
97 understanding that there could be one or more contributors to the presenting AUB.

### 98 **Relevance of Standardized Terminology for Sports and Exercise Science and Medicine**

99 We posit that using standardized terminology for abnormal menstrual bleeding is crucial in  
100 SESM to enhance cross-disciplinary communication and care. This would benefit female athletes by  
101 ensuring precise diagnoses and better management through a collaborative healthcare team. We also  
102 believe that adopting the FIGO classification system for AUB in SESM research may potentially improve  
103 consistency and comparison across studies, enable the collection of common data elements, and advance  
104 scientific understanding and collaboration, ultimately leading to improved athlete health and performance.

105 Although efforts are being made, unfortunately, this change in terminology has not yet permeated  
106 the SESM literature (1,8,9). Thus, researchers and clinicians outside of Obstetrics and Gynecology tend to

107 use previously accepted language when describing menstrual cycle disturbances (e.g., oligomenorrhea). If  
108 researchers wish to enhance further cross-discipline collaboration, readership, and application of their  
109 work related to menstrual cycle health, we suggest including the PALM-COEIN categorization (e.g.,  
110 abnormal uterine bleeding with ovulatory dysfunction or AUB-O; Table 1) in addition to more familiar  
111 terminology that would otherwise be used. Future consensus statements on female athlete health and well-  
112 being may also consider adopting this classification system when reporting AUB. We, therefore,  
113 encourage all sports medicine providers to become familiar with these terms to better facilitate athlete  
114 screening, improve appropriate referrals to gynecology, and enhance overall female athlete care via cross-  
115 discipline collaboration and communication.

116

## 117 **Statements**

118 *Equity, Diversity, and Inclusion Statement:* The authors of this editorial represent a diverse genders,  
119 countries, ethnicities, and sports medicine and sports science disciplines.

120 *Conflict of Interest Statement:* KEA receives research funding from the Joe and Clara Tsai Foundation as  
121 part of the Wu Tsai Human Performance Alliance and from Nike. She receives speaker and writer  
122 honoraria from Gatorade Sports Science Institute, Hologic, Springer, and UptoDate. She is a deputy editor  
123 of the British Journal of Sports Medicine and an associate editor of the British Journal of Sports  
124 Medicine's Injury Prevention and Health Protection Edition. KJE-S has received funding/honoraria from  
125 Arsenal Football Club, The UK Sports Institute, the European Club Association, Gatorade Sport Science  
126 Institute, Hologic, Science in Sport, and the UK Ministry of Defence to support female athletes. TS has  
127 received funding/honoraria from the Wu Tsai Human Performance Alliance, Ineos, Science in Sport (Sis)  
128 Own The Podium, Gatorade Sport Science Institute and Lululemon Athletica to support research,  
129 including projects on female participants. JTF receives royalties from UptoDate and Demos Publishing.  
130 WMA serves on the advisory board for My Normative, where he receives stock options as compensation  
131 for his efforts. WMA is a member of the Sport Advisory Council for the Wu Tsai Human Performance  
132 Alliance. WMA also receives royalties from Springer Nature. EK receives research funding from the Joe  
133 and Clara Tsai Foundation as part of the Wu Tsai Human Performance Alliance. None of the above  
134 honoraria and funds have a direct competing interest with the content of this editorial. OTC, TA, EC,  
135 ATD, EGP, and EC have nothing to disclose.

136 *Contributorship:* CTO was responsible for the initial draft of this editorial. TA was responsible for the  
137 editorial conceptualization. All authors were responsible for the editorial critical review, editing, and  
138 approval. Guarantor is CTO.

139 *Acknowledgments:* This work is the authors' own and not that of the United States Olympic & Paralympic  
140 Committee or any of its members or affiliates.

141 *Funding:* The authors have not declared a specific grant for this research from any funding agency in the  
142 public, commercial or non-profit sectors

- 143 *Ethical approval:* Not required.
- 144 *Data Sharing:* No data to share.
- 145 *Provenance and Peer Review:* Not commissioned; externally peer-reviewed.
- 146 *Patient Involvement:* Patients were not involved in this editorial.
- 147

149 Table 1. Sports Medicine Relevant Changes to Abnormal Uterine Bleeding Terminology

Previous Terminology	Action	Replacement Terminology	Description
Amenorrhea	Retained	-	Primary Amenorrhea: Failure of onset of menstruation by the age of 15 years. Evaluations for primary amenorrhea should also occur after age 14 without secondary sex characteristics or if there is no menarche 3 years after the onset of secondary sex characteristics. Secondary Amenorrhea: Absence of menstrual periods for more than 3-6 months <sup>^</sup> in an individual who has had at least one spontaneous menses.
Luteal Phase Defect	Specified	AUB-E	Abnormal bleeding due to inadequate levels of progesterone secretion.
Anovulation (without amenorrhea)	Specified	AUB-O	Abnormal uterine bleeding due to ovulatory dysfunction.
Menorrhagia	Replaced	Heavy Menstrual Bleeding (HMB)	Excessive bleeding from the uterine corpus that may interfere with the physical, emotional, social, and material qualities of life.
Metrorrhagia	Replaced	Intermenstrual Bleeding (IMB)	Bleeding from the uterine corpus that occurs randomly or predictably outside of cyclic or scheduled menses.
Dysfunctional menstrual bleeding	Replaced	Chronic AUB	Bleeding from the uterine corpus that is abnormal in duration, volume, frequency, and/or regularity that has been present for greater than or equal to 6 months.
Dysfunctional menstrual bleeding	Replaced	Acute AUB	Abnormal, typically heavy, bleeding from the uterine corpus that requires immediate intervention to prevent further blood loss.
Oligomenorrhea	Replaced	AUB-infrequent	Menstrual cycle lengths more than 38 days.
Polymenorrhea	Replaced	AUB-frequent	Menstrual cycle lengths of fewer than 24 days.
Dysfunctional uterine bleeding	Discarded	-	-

150 <sup>^</sup>Munro et al. (10) specify 180 days.

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