

Can we achieve international agreement on terminologies and definitions used to describe abnormalities of menstrual bleeding?[†]

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BACKGROUND: There is considerable worldwide confusion in the use of terminologies and definitions around the symptom of abnormal uterine bleeding (AUB), and these are leading increasingly to difficulties in setting up multinational clinical trials and in interpreting the results of studies undertaken in single centres. An international initiative was established to develop an agreement process to recommend clear, simple terminologies and definitions with the potential for wide acceptance. **METHODS:** After widespread consultation with relevant international and national organizations, journal editors and individuals, a modified Delphi process was developed to assess the current use of terminologies followed by a structured face-to-face meeting of 35 clinicians (mostly gynaecologists) and scientists in Washington. Focused small group discussions led to plenary assessment of concepts and recommendations using an electronic keypad voting system. **RESULTS:** There was almost universal agreement that poorly defined terms of classical origin used in differing ways in the English medical language should be discarded and that these should be replaced by simple, descriptive terms with clear definitions which have the potential to be understood by health professional and patient alike and which can be translated into most languages. The major recommendations were to replace terms such as menorrhagia, metrorrhagia, hypermenorrhoea and dysfunctional uterine bleeding. Suggestions for potentially suitable replacement terms and definitions are made. **CONCLUSIONS:** A simple terminology has been recommended for the description and definition of symptoms and signs of AUB. This manuscript should be a living document and should be part of an ongoing process with international medical and community debate. Classification of causes, investigations and cultural and quality of life issues should be part of the ongoing process.

Key words: abnormal uterine bleeding/definitions/dysfunctional uterine bleeding/menorrhagia/menstruation/terminology

Introduction

Clinicians use a variety of terms to describe disorders of menstrual bleeding. These include both descriptive and diagnostic terms and phrases. Similar terms are used in different ways in different countries and even by different gynaecologists within a single practice setting (Fraser and Inceboz, 2000).

The use of terminologies of classical origin by English-speaking health professionals, especially doctors, has been traditional over recent centuries, but in the past few decades, these

have been increasingly discarded in many fields of medicine. Several terms with Greek and Latin roots are still extensively used in the English language to describe different abnormalities of menstrual bleeding, and the most widely used of these include menorrhagia, metrorrhagia, meno-metrorrhagia, hypermenorrhoea, polymenorrhoea, oligomenorrhoea and amenorrhoea (Fraser and Inceboz, 2000; J. Woolcock *et al.*, submitted for publication). Unfortunately, most of these terms are ill-defined and may be used quite differently in different parts of the world. The situation becomes even less well defined when terminologies such as 'dysfunctional uterine bleeding' (DUB) are also considered (Aksel and Jones, 1974;

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Crosignani and Rubin, 1990; Bayer and DeCherney, 1993; Munro, 2000).

An examination of terminologies and definitions used for abnormalities of menstrual bleeding presupposes an understanding of the characteristics associated with normal menstruation (such as regularity, frequency, duration, volume and other bleeding characteristics). Yet, in spite of several reasonably large scale population studies of various menstrual characteristics (Matsumoto *et al.*, 1962; Hallberg *et al.*, 1966; Treloar *et al.*, 1967; Chiazzo *et al.*, 1968; Cole *et al.*, 1971; Vollman, 1977; Munster *et al.*, 1992), there is still a lack of general awareness of what criteria should be used to define ‘normality’ (Warner *et al.*, 2004).

A similar lack of uniformity in cervical cancer staging led the International Federation of Gynecology and Obstetrics (FIGO) to establish a cervical cancer staging system in the 1920s. The success of the FIGO staging system is reflected in its continued use and the publication of similar systems for other gynaecological cancers (Benedet *et al.*, 2000). This type of repeatedly updated ‘living staging system’ could act as a useful model for other complex symptomatic and diagnostic situations, including the definition and classification of the wide range of menstrual bleeding disorders. This analogy recognizes that there would have to be considerable differences between systems used for gynaecological cancers and for abnormal uterine bleeding (AUB).

Increased uniformity of terminology and definitions should improve communication among health-care providers, teaching of students, design and interpretation of basic research and clinical trials and, most importantly, patient care. We designed the current study and ‘agreement process’ to examine the extent to which terms describing abnormal menstrual bleeding have common meanings and, to the extent they do not, to develop such agreement using a formalized process. The continued valid use of these ill-defined terms and possible alternatives was also explored.

Materials and methods

We used a carefully scrutinized, multi-stage process to improve the level of agreement on common terminology for menstrual disorders. The process began with the examination of the current use of terms pertaining to menstrual disorder. Then, we reviewed a wide range of historical and recent published literature looking for uses of three key terms commonly used to describe disturbances of menstruation: AUB, menorrhagia and DUB (J. Woolcock *et al.*, submitted for publication). These terms were selected because the authors felt that they represented three of the most commonly employed terms to describe bleeding symptoms, signs and possible causes. Literature reviewed included textbooks, clinical trials and review articles. We did not attempt to exhaustively review a precise body of clinical literature, but rather to explore the various ways that common terms were used or defined.

After conducting this review and confirming our suspicion that little agreement existed around the use of key terms, we organized a Delphi panel using a validated modification of the RAND/UCLA (University of California at Los Angeles) process to examine these disagreements. The Delphi panel approach is a nominal group process designed to elicit opinion about a clearly defined topic (Brook *et al.*, 1986). A group of panellists is presented with a series of items which they

rate anonymously and independently using a numerical scale. The aggregate ratings are then shared with the entire group at a face-to-face meeting. After discussion, the panellists re-rate each item. This process was organized by a team with extensive experience of the technique (M. Broder and the Partnership for Health Analytic Research, Beverly Hills, CA, USA).

The Delphi process has been used extensively to develop clinical guidelines on topics such as coronary revascularization, hysterectomy and colonoscopy (Park *et al.*, 1986; Vader *et al.*, 2000; Hemingway *et al.*, 2001). Guidelines developed using the modified Delphi process are reliable and their clinical use may improve outcomes (Shekelle *et al.*, 2001). For example, under-use of coronary revascularization identified using expert panel guidelines was associated with worse clinical outcomes than appropriate use (Hemingway *et al.*, 2001). The goal of our panel was to develop an agreed upon terminology that could be used by clinicians caring for women with menstrual disorders. The panellists were selected to represent the international community of obstetrician–gynaecologists and related clinicians and scientists, with an emphasis on including participants from developing and developed countries. It was recognized that this first process could not represent wide medical and community viewpoints, and the individual participants were chosen because of a demonstrated track record of writing and speaking about issues related to disturbances of menstruation.

We began by developing a conceptual model of the elements necessary to describe and diagnose menstrual bleeding disorders. From this model, we created a survey to elicit panellists’ beliefs about current classification of and terminology for bleeding disorders. The survey also asked panellists to rate a variety of assessment tools and techniques for diagnosing menstrual disorders. The panel was asked to complete the survey in advance of a face-to-face meeting. Results were tabulated as the proportion of respondents giving a particular answer and as to whether there was ‘agreement’ among respondents. Most items were rated on a four-point scale, and for these items, agreement was defined to mean that >80% of respondents rated the item either ‘agree and strongly agree’ or ‘disagree and strongly disagree’. For example, if the rating scale was 1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree, then we considered the panellists to be in agreement if >80% of respondents gave either a ‘disagree’ answer (1 or 2) or an ‘agree’ answer (3 or 4). Agreement was noted in tables with an ‘A’ and lack of agreement with a ‘D’.

The panellists met in person for 2.5 days in February 2005 in Washington DC, USA, to discuss the survey results and work towards an internationally based agreement on nomenclature for symptoms, signs and diagnoses related to AUB. The panel also discussed the development of a classification system for diagnoses and disorders related to AUB, which will be addressed in a future manuscript. The face-to-face meeting also entered preliminary discussions on matters related to investigations and to cultural and quality of life issues, topics that lead directly on from an initial agreement process. The aggregate survey responses were reviewed in a plenary session of all meeting participants and again in small groups dedicated to particular aspects of classification and terminology.

After extensive discussion, the small groups identified areas of agreement and disagreement, which were used to create new survey questions. These modified surveys were then administered to all participants during a plenary session using electronic voting. In this second round of ratings, two levels of agreement were identified. Panellists were considered to have ‘agreed’ on an item if ratings met the original criteria (>80% of answers were either 1 and 2 or 3 and 4). Panellists were considered to have ‘unanimously agreed’ if all rated an item either 1 and 2 or 3 and 4 (e.g. 100% of respondents selected either 4, ‘strongly agree’, or 3, ‘agree’). Unanimous agreement was noted in tables with an ‘A +’.

Table I. Pre-meeting survey: statements relating to the usage of three terms as descriptions of symptoms or signs of abnormal bleeding or indicative of an underlying diagnosis

	Abnormal uterine bleeding, n ^a (%)	Dysfunctional uterine bleeding, n (%)	Menorrhagia, n (%)
Respondent believes that the term describes a sign or symptom but is <i>not</i> a diagnosis	21 (75)	2 (8)	18 (64)
Respondent believes that the term is a diagnosis and <i>not</i> a descriptive term	1 (4)	16 (59)	4 (14)
Respondent believes that the term can be a descriptive term or a diagnosis	6 (21)	9 (33)	6 (22)

^aNot all respondents answered every question.

Results

Pre-meeting survey

Twenty-nine of 31 participants returned their pre-meeting survey. The survey comprised 226 items grouped under two headings: 'Current Terminology and Classifications' and 'Possible Terminology and Classifications'. Only those questions that related to terminologies and definitions have been considered in this manuscript. Classification issues will be addressed in a separate manuscript. We mailed 35 demographic surveys (this included four observers) and 22 (63%) panellists responded fully; partial information was available from the remainder. Respondents represented 14 countries, with 12 from USA, 4 from UK, 2 from Sweden, 2 from Switzerland and 1 each from 11 other countries. Several of these individuals came from supportive organizations, such as the American Society for Reproductive Medicine, the European Society for Human Reproduction and Embryology, the World Health Organization (WHO), the FIGO and National Colleges and Societies. However, these individuals were not formally representing the views of their organizations. The majority (80%) were currently spending at least some time in clinical practice and had been practising for an average of 25 years (range 7–40 years). Most active clinicians (19/25) practised in large cities and the remainder in smaller cities.

In the pre-meeting survey, panellists agreed on only 26 out of the 60 items which directly related to terminologies and definitions. Seventeen of the items on which the participants were in agreement related to terminologies and definitions around *AUB* (28 items total), two 'agreements' related to *DUB* (16 items total) and seven related to menorrhagia (16 items total).

Participants were asked specifically about their personal understanding of the three terms: *AUB*, *DUB* and menorrhagia as symptoms, signs or diagnoses (Table I). A high proportion responded that *AUB* is a symptom or sign, but not a diagnosis

(75%), but 21% felt that it could be a symptom, sign or diagnosis and 4% felt it referred only to a diagnosis. Responses regarding the definitions and usage of *DUB* and menorrhagia were more varied. A small majority felt that *DUB* is a diagnosis and not a symptom or sign (59%), whereas 33% felt that they could use the term as a symptom, sign or diagnosis. Again, only a small majority (64%) were in agreement that menorrhagia is descriptive of a symptom or sign but is not a diagnosis, whereas 14% felt that it is a diagnosis and not a symptom or sign. Twenty-two percent felt that they could use menorrhagia as a symptom, sign or diagnosis.

The participants in the process were also asked about the symptoms they associated with the terms *AUB*, *DUB* and menorrhagia (Table II). Although the great majority (96%) agreed that menorrhagia related *only* to abnormally heavy bleeding of some type, a large minority felt that both *AUB* (44%) and *DUB* (38%) could relate to either abnormally heavy, abnormally timed or abnormally light bleeding.

Panellists were asked what standards they currently used in a clinical setting for determining the presence of *AUB*, *DUB* and menorrhagia (Table III), and small majorities responded that they used a structured menstrual history for all three. However, a substantial minority used an unstructured history. Few used a prospective validated scale, such as a pictogram, in the clinical situation.

The relationship between the three main terms, *AUB*, *DUB* and menorrhagia, and other descriptive terms for menstrual symptoms or conditions were explored (Table IV). With regard to *AUB*, a minority responded that this term encompasses 'reduced' bleeding symptoms ('hypomenorrhoea' and 'oligomenorrhoea') and post-coital bleeding, but almost all believed that it encompassed the remaining terms. There was a strongly predominant view that the term menorrhagia encompasses hypermenorrhoea but not the other relationships. There was no predominant view regarding *DUB*, except that most responded that it did not include post-coital bleeding.

Table II. Pre-meeting survey: usage of three different terms in relation to different presentations of abnormal uterine bleeding

	Abnormal uterine bleeding, n (%)	Dysfunctional uterine bleeding, n (%)	Menorrhagia, n (%)
Refers <i>only</i> to abnormally heavy bleeding	1 (4)	3 (11)	26 (96)
Refers <i>only</i> to abnormally timed bleeding	0	2 (7)	0
Refers <i>only</i> to abnormally light bleeding	0	0	0
Refers to bleeding that is abnormally heavy or abnormally timed	14 (52)	12 (44)	1 (4)
Refers to bleeding that is <i>either</i> abnormally heavy, abnormally timed or abnormally light	12 (44)	10 (38)	0

Table III. Pre-meeting survey: participant responses to the statements which best describe the minimum standard they currently use for determining the presence of abnormal uterine bleeding, dysfunctional uterine bleeding or menorrhagia

	AUB, <i>n</i> (%)	DUB, <i>n</i> (%)	Menorrhagia, <i>n</i> (%)
Unstructured menstrual history is sufficient	12 (46)	8 (31)	9 (33)
Structured history using standard documentation is necessary	14 (54)	17 (65)	16 (60)
A prospective validated scale or pictogram must be used	0	1 (4)	2 (7)

Second round survey during conference

During the course of the face-to-face meeting and following extensive subgroup and plenary discussion, the 31 participants undertook further rounds of formal electronic voting on aspects of terminology and definitions for abnormal bleeding (Table V). All now agreed that AUB is *not* a diagnosis, but describes a sign or symptom. There was now an agreement that AUB should come under the umbrella term ‘abnormal reproductive tract bleeding’, recognizing that bleeding may come from other parts of the reproductive tract. There was also a high level of agreement on the use of the term AUB to describe all abnormal menstrual signs and symptoms arising from the uterine corpus, but a lower level of agreement on including signs or symptoms arising from lesions outside the uterine corpus (e.g. cervix) or during pregnancy. Most participants strongly agreed that the terms DUB, metrorrhagia and meno-metrorrhagia should be discarded. An e-mail poll shortly following the face-to-face process confirmed that the group strongly agreed that the term menorrhagia should also be discarded. They further agreed that intermenstrual bleeding should be included as AUB (Table V).

The panel discussed the limits of normal menstruation at length. Rather than identify specific numbers of days of bleeding, they preferred to *initially* use percentiles to define normal and abnormal patterns. Specifically, they agreed that menses occurring more or less often than the 5th and 95th percentiles should be classified as potentially abnormal and that duration of flow outside these same limits should be considered as potentially abnormal (Table V). This range has been estimated to be from 22 to 35 days [in the mid-reproductive years in several studies (Snowden and Christian, 1983)]. They

unanimously agreed that a change in the menstrual pattern for a particular woman can be abnormal even if the interval or duration of flow remains within the 5th–95th percentiles, but there is no evidence to provide a threshold for determining an unacceptable level of change. The panel felt that age- and population-specific estimates of the normal menstrual parameters should be used, if available (Treloar *et al.*, 1967; Snowden and Christian, 1983). It was considered that these practical limits require further testing in the clinical situation in different populations.

Participants strongly agreed that it was important to describe AUB symptoms using a specified simple list of dimensions, and there should only be three choices of descriptive words for each dimension—‘above’ and ‘below’ *normal* (Table VI). The four key ‘menstrual dimensions’ should be cycle regularity, frequency of menstruation, duration and volume of menstrual flow.

Regularity should be specified as irregular, regular or absent.

Frequency should be specified as frequent, normal or infrequent.

Duration should be specified as prolonged, normal or shortened.

Volume should be specified as heavy, normal or light.

Any additional abnormality should be specified (e.g. change in the menstrual pattern, intermenstrual bleeding, premenstrual spotting). The concept of menstrual ‘shape’ was also discussed, where the patient’s perception of the pattern of changes in volume from day to day is recorded (Snowden and Christian, 1983). It was felt that there are so few data available about this concept that it cannot currently be incorporated into a

Table IV. Pre-meeting survey: beliefs about the relationship between abnormal uterine bleeding, dysfunctional uterine bleeding, menorrhagia and a range of terms used to describe different menstrual symptoms or conditions

	Percentage of participants who believed that these three terms encompass the additional terms listed at the left		
	AUB (%)	DUB (%)	Menorrhagia (%)
Menorrhagia	96	75	—
Hypermenorrhoea	93	71	96
Polymenorrhoea	93	68	25
Metrorrhagia	96	71	14
Meno-metrorrhagia	93	75	36
Hypomenorrhoea	46	29	0
Oligomenorrhoea	43	39	0
Intermenstrual bleeding	89	43	0
Post-coital bleeding	46	14	0
AUB	—	50	29
DUB	96	—	25

Table V. Face-to-face meeting: panel ratings of terminologies and definitions by electronic voting following subgroup and plenary discussions

	Strongly agree (<i>n</i>)	Agree (<i>n</i>)	Disagree (<i>n</i>)	Strongly disagree (<i>n</i>)	Panel rating
Terminology					
Abnormal uterine bleeding describes a sign or symptom	30	0	0	0	A +
AUB belongs under the umbrella term 'abnormal reproductive tract bleeding'	24	6	0	0	A +
The term dysfunctional uterine bleeding should be discarded	26	3	2	0	A
The term metrorrhagia should be discarded	27	4	0	0	A +
The term meno-metrorrhagia should be discarded	27	4	0	0	A +
Intermenstrual bleeding should be considered part of AUB	27	4	0	0	A +
Lesions or origin other than uterine corpus should be excluded from AUB	16	10	3	1	A
Pregnancy status should be determined, but AUB can be present in pregnant and non-pregnant women	20	6	3	1	A
Definition of abnormal					
Menses occurring more or less often than the 5th and 95th percentiles are abnormal	20	8	1	1	A
Duration of flow outside the 5th and 95th percentiles is abnormal	19	8	1	1	A
Change in the menstrual pattern for a particular woman can be abnormal even if it falls within these percentile limits	25	4	0	1	A +
A description of bleeding 'shape' should be considered in the classification system	3	5	8	15	D

A+, unanimous; A, $\geq 80\%$ agreement; D, $< 80\%$ agreement.

menstrual assessment scheme, although research on the topic is clearly needed.

Discussion

The strongest conclusion arising from this process was that most English language menstrual terminologies with Greek or Latin roots were so ill-defined that they should be discarded and that simple descriptive terms that could be understood by women and translated into most languages should be used instead (Table VI). The four dimensions of cycle regularity, menstrual period frequency, duration of flow and volume of flow were seen as requiring explicit exploration in a structured clinical history (Ruta *et al.*, 1995; Warner *et al.*, 2001), and simple key words should be used to describe the most important features (e.g. 'heavy, irregular menstrual bleeding').

In Table VI, the most important features of each dimension of the menstrual period have been simplified as much as possible within the clinical context. For example, 'volume of flow' has been categorized as 'heavy, normal or light', terms that

patients use and understand, recognizing that this is 'patient complaint' and highly subjective. This can be supplemented by leading questions from the physician and by certain investigations, but the clinical situation always has a substantial degree of uncertainty. It has been said that 'menorrhagia' (or heavy bleeding) is the 'physician's interpretation of the woman's description of her own perception of her increased menstrual loss' (Fraser, 1994). Clearly, there is an important clinical interface where common understanding of terminologies is critical to good communication.

The term 'excessive' has been deliberately omitted from the description of heavy bleeding because of the additional uncertainties and lack of definition of this word. The New Zealand Guidelines on Heavy Menstrual Bleeding were the first to clearly recognize and use the terminology 'heavy' (New Zealand Working Party 1999). However, it was recognized that there will be a minority of women who present with the complaint of heavy bleeding, who will have a strong history of very heavy bleeding supported by iron-deficiency anaemia and who may therefore merit this label. Nevertheless, the

Table VI. Face-to-face meeting: terms which should be used to describe the separate components of normal and abnormal menstrual bleeding

DESCRIPTIVE TERMS	Strongly agree (<i>n</i>)	Agree (<i>n</i>)	Disagree (<i>n</i>)	Strongly disagree (<i>n</i>)	Panel rating
Regularity (periodicity)	28	2	1	0	A
Terms to describe regularity include <i>regular</i> , <i>irregular</i> and <i>absent</i>	25	4	1	1	A
Duration of flow	29	1	1	0	A
Terms to describe duration include <i>prolonged</i> , <i>normal</i> and <i>shortened</i>	25	5	1	0	A
Frequency	26	4	1	0	A
Terms to describe frequency include <i>frequent</i> , <i>normal</i> and <i>infrequent</i>	22	4	3	1	A
Volume	27	3	1	0	A
Terms to describe volume include <i>heavy</i> , <i>normal</i> and <i>light</i>	27	3	1	0	A

A, $\geq 80\%$ agreement. The descriptive terms for the four main components of bleeding were assessed for agreement separately from the three subterms within each component.

participants strongly felt that the parameters of normality for the menstrual cycle and menstruation could probably be realistically set at the 5th–95th percentiles from population studies (Belsey *et al.*, 1997; Fraser and Inceboz, 2000). This would allow ‘heavy’ to be above the 95th percentile of the normal population and ‘light’ would be below the 5th percentile. This issue of ‘normality’ of the menstrual cycle needs to be further addressed in future discussions, especially since individual perception by the patient is a key factor in determining presentation with a complaint.

At this point, one needs to consider the different requirements of the routine clinical situation, where attempts at objective measurement are unrealistic, and the research situation, where objective measurement may be critical. This topic is itself a matter for urgent and practical research investigation. There will also be clinical situations where a woman with, say, prolonged bleeding beyond the 95th percentile is investigated and no pathology is found. A ‘functional’ (perhaps of some local molecular system) anomaly is assumed, but no active therapy may be required—but she may still be considered to be outside the range of normality. Conversely, there will be some women who have heavy bleeding which is considered within the 95th percentile, but still have anaemia, perhaps as a consequence of dietary deficiencies. Her clinical condition arises as a consequence of a combination of abnormalities and her measured blood loss remains within the limits of normality. An alternative scenario is the modern trend in some countries for young working women to be less tolerant to heavier, normal menstruation, and even to seek a ‘bleed-free’ lifestyle. The issues of perception and tolerance may be important factors in determining ‘complaint’ of heavy bleeding, when measured blood loss would be well within the limits of normality, however, defined.

It was agreed that all four major clinical dimensions of menstruation and the menstrual cycle could each be described by three simple words (Table VI) and that a structured menstrual history should then clarify the few simple facts related by the woman and on which the summary description of symptoms was based (Ruta *et al.*, 1995; Warner *et al.*, 2001). Sufficient published population data exist in the literature to allow a provisional estimate of the 5th–95th percentiles for the dimensions of the normal cycle and normal menstruation (Snowden and Christian, 1983), although there are criticisms of each

individual study as to the normality of the recruited population. It also needs to be recognized that there are age-related changes, and probably ethnically related changes (Snowden and Christian, 1983).

Suggested normal limits for the four main clinical dimensions of menstruation and the menstrual cycle are summarized in Table VII, based mainly on published data and where possible 5th–95th percentiles. These have been developed following the face-to-face meeting and based primarily on the independent WHO analysis (Belsey *et al.*, 1997) of the unique and very extensive menstrual record database developed by Dr Alan Treloar and the Tremin Trust (Treloar *et al.*, 1967). After careful exclusion of inappropriate records and obvious errors, 6375 complete year records in healthy, normally menstruating women of reproductive age were available for analysis.

Data for frequency of menses and duration of flow are relatively straightforward, but the upper 95th percentile limit for regularity of menses is almost certainly skewed by the proportion of women in the community who have infrequent and irregular bleeding due to common variants of the polycystic ovary syndrome. It can be argued that a more realistic normal upper limit for ‘regularity’ could be taken as the 75th percentile (a variation of around 20 days between the shortest and the longest cycle experienced by an individual during the course of 1 year). This also requires prospective review.

Suggestions for the limits of normality of volume of monthly measured menstrual blood loss (Table VII) have been based primarily on research measurements of haemoglobin loss in a Swedish community by Hallberg *et al.* (1966).

These ‘suggestions’ for the limits of normality should be regarded merely as a basis for future detailed reanalysis of the many studies of normal menstrual patterns in the literature and should be one of the first tasks for a proposed Study Group, under the aegis of the FIGO, on further development of the proposals embodied in this document.

The terms ‘uterine bleeding’ and ‘menstrual bleeding’ have both been used in various formats in this document. It is recognized that not all AUB is ‘menstrual’, and therefore, the term AUB has been generally preferred. Further debate needs to address the specific usage of the terms menstruation and menstrual bleeding.

It is clear that the lack of internationally agreed terminologies for menstrual symptoms, signs and diagnoses has

Table VII. Suggested normal limits for menstrual parameters in the mid-reproductive years

Clinical dimensions of menstruation and menstrual cycle	Descriptive terms	Normal limits (5th–95th percentiles)
Frequency of menses (days)	Frequent	<24
	Normal	24–38
	Infrequent	>38
Regularity of menses (cycle to cycle variation over 12 months; in days)	Absent	—
	Regular	Variation ± 2 to 20 days
	Irregular	Variation greater than 20 days
Duration of flow (days)	Prolonged	>8.0
	Normal	4.5–8.0
	Shortened	<4.5
Volume of monthly blood loss (ml) (Hallberg <i>et al.</i> , 1966)	Heavy	>80
	Normal	5–80
	Light	<5

Based primarily on Hallberg *et al.*, 1966, Treloar *et al.*, 1967, Snowden and Christian 1983, Belsey *et al.*, 1997.

interfered with the universal interpretation of research and clinical trials, and in communication between clinicians worldwide. Systematic reviews and meta-analyses cannot realistically be performed on clinical trials for certain menstrual symptoms and diagnoses because of significant heterogeneity across studies. Consequently, dissemination of research findings has been slowed by having different definitions in different countries, and there has been substantial potential for misinterpretation of research findings across cultures.

It should be noted that the Population Council and the WHO have invested considerable effort into defining limits for a range of terms to objectively describe the unpredictable patterns of breakthrough bleeding which commonly occur in women using long-acting hormonal contraceptives (Rodriguez *et al.*, 1976; Belsey *et al.*, 1986; Belsey *et al.*, 1997). These simple descriptive terminologies have important overlap with the proposals in this manuscript (Fraser, 1999).

The gynaecological oncology staging systems of the FIGO and of the WHO have demonstrated ways of simplifying clinical and basic research and improving clinical care of women with gynaecological cancers by creating uniform structures for terminologies, definitions and classifications (Benedet *et al.*, 2000). These staging systems have been gradually developed over many decades and have shown how important it is to have an ongoing 'living' process that allows new concepts and new technologies to refine the classification systems. There are some parallels in these systems which could well be applied to the further development and refinement of terminologies, definitions and classifications for menstrual symptoms and underlying causes. However, there are also substantial differences in the underlying clinical issues. It is expected that genuine international agreement should stimulate improved collaborative and multinational research on menstrual disorders, clarify areas where knowledge is lacking and allow more effective widespread dissemination of information.

Finally, it was proposed by participants that all 'menstrual' terminologies with direct classical roots (such as menorrhagia) used in the English medical language be abandoned because of the current demonstrated lack of agreement on their usage. This recommendation was not based on the origins of the words, but on

the perception that it is most unlikely that their currently confused meanings could be successfully re-defined and focused on an international scale. The term *DUB* has been included in this group of terminologies meriting abandonment for similar reasons. The justification for recommending abandonment of the terms menorrhagia and *DUB* is summarized in Table VIII.

Suggested replacement terminologies for most of the abandoned terms describing symptoms have been summarized in Table VI. *DUB* is a little different, since physicians in most parts of the world have used this as a diagnosis rather than a symptom (Crosignani and Rubin, 1990), and full consideration of possible suitable replacement terms is more appropriate in the companion discussion paper (currently in preparation) from the Washington meeting on classifications of causes of AUB. In reality, *DUB* is a term used primarily when there is a lack of current understanding of the underlying disturbances of molecular mechanisms within the endometrium (primary endometrial disorder) or the hypothalamic–pituitary–ovarian axis (primary HPO disorder). However, some examples of relevant, but temporary replacement terms could include 'idiopathic heavy, regular bleeding', 'idiopathic heavy irregular bleeding' or 'idiopathic prolonged, irregular bleeding'. Such general terms may be translated into more specific diagnostic terms describing recognized causes following the performance of appropriate detailed investigations. However, as ongoing research allows more precise definition of underlying molecular causes, suitable replacement terms will become more accurately descriptive. These issues will be more thoroughly discussed in the future 'Classifications' manuscript.

It is recommended that this initial attempt by a group of experienced clinicians, mainly gynaecologists, and scientists (all with demonstrated interests in the menstrual disorders field) should be regarded as a starting point for international debate. The degree of unanimity of most of the decisions by this group gives hope that widespread international agreement on terminologies can be rapidly achieved and disseminated. The most difficult issue will probably be the determination of how the limits of normality of menstruation and the menstrual cycle can be set. FIGO has agreed to support the establishment of a Study Group to further explore the points of agreement and

Table VIII. Justification for abolition of the terms menorrhagia and dysfunctional uterine bleeding

Menorrhagia

A confusing term with Latin and Greek roots which is loosely defined in the English medical language but which most physicians use to describe some aspect of heavy menstrual bleeding
Used equally as a symptom, a sign or a diagnosis in the USA
Used solely as a symptom or sign in most other parts of the world
Used solely to describe regular heavy bleeding in the USA
Encompasses regular and irregular heavy bleeding elsewhere
Encompasses prolonged bleeding (but not necessarily heavy) for some clinicians
Conveys a sense of excessively heavy bleeding to most physicians
More often encompasses a complaint of just heavy (not excessive) bleeding for most women

Women in most countries do not understand the term menorrhagia

Dysfunctional uterine bleeding

This is generally used as a diagnosis of exclusion and an admission of ignorance of underlying mechanisms
Used as a symptom, a sign and a diagnosis in the USA
Used predominantly as a diagnosis in most countries
Refers solely to anovulatory (irregular) bleeding, which is not necessarily heavy, in the USA
Can be used to describe both ovulatory (regular) or anovulatory (irregular) heavy bleeding in most other countries
This terminology is not understood by women

dissent, to review the suggested limits of normality and to extend the discussions within the broader medical profession and into the general community. It is expected that this will include consideration of cultural and quality of life issues which may impact the use and understanding of terminologies, definitions and classifications.

Conclusions

Since there is so little international agreement on the meaning of menstrual symptom terminologies of classical origin currently used in the English language, it is recommended that these should be universally discarded. The term *DUB* should also be discarded. It seems probable that few clinicians have actually been aware of the extent of worldwide disagreement on use of these terms and definitions. This confusion has prevented much collaborative research and international clinical trials. These terminologies should be replaced by simple descriptive terms which cover regularity of the cycle, frequency of menstruation and volume and duration of the menstrual flow. Ideally, these terms should also be understandable to women in the community and be capable of translation into other languages. These recommendations should be the starting point for further international debate and focus on a more extensive but 'living' document which includes classifications, investigations and consideration of cultural and quality of life issues.

Participants

The active participants in this process have been invaluable in bringing new ideas to the table and developing the debate on a previously very confused clinical area. Each has contributed substantially to this process and has approved this manuscript. Names are listed alphabetically.

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References

- Aksel S and Jones GS (1974) Etiology and treatment of dysfunctional uterine bleeding. *Obstet Gynecol* 44,1–13.
- Bayer SR and DeCherney AH (1993) Clinical manifestations and treatment of dysfunctional uterine bleeding. *JAMA* 269,1823–1828.
- Belsey EM, Machin D and d'Arcangues C (1986) The analysis of vaginal bleeding patterns induced by fertility regulating methods. *Contraception* 34,253–260.
- Belsey EM and Pinol AP, World Health Organization Task Force on Long-Acting Systemic Agents for Fertility Regulation (1997) Menstrual bleeding patterns in untreated women. *Contraception* 55,57–65.
- Benedet JL, Bender H, Jones H, III, Ngan HY and Pecorelli S (2000) FIGO staging classifications and clinical practice guidelines in the management of gynecologic cancers. FIGO Committee on Gynecologic Oncology. *Int J Gynaecol Obstet* 70,207–312.
- Brook RH, Chassin MR, Fink A, Solomon DH, Koscoff J and Park RE (1986) A method for the detailed assessment of the appropriateness of medical technologies. *Int J Technol Assess Health Care* 2,53–63.
- Chiazze L, Brayer FT and Macisco J (1968) The length and variability of the human menstrual cycle. *J Am Med Assoc* 203,377–385.
- Cole SK, Billewicz WZ and Thompson AM (1971) Sources of variation in menstrual blood loss. *J Obstet Gynaecol Br Comm* 78,933–939.
- Crosignani PG and Rubin B (1990) Review and guidelines on dysfunctional uterine bleeding. Study Group of the European Society of Human Reproduction and Embryology. *Hum Reprod* 5,637–638.
- Fraser IS (1994) Menorrhagia: a pragmatic approach to the understanding of causes and the need for investigations. *Br J Obstet Gynaecol* 101(Suppl 11),3–7.
- Fraser IS (1999) Bleeding arising from the use of exogenous steroids. *Bailliere Clin Obstet Gynaecol* 13,203–222.
- Fraser IS and Inceboz US (2000) Defining disturbances of the menstrual cycle. In O'Brien PMS, Cameron I and MacLean AB (eds) *Disorders of the Menstrual Cycle*, 1st edn. RCOG Press, London, pp. 141–152.
- Hallberg L, Hogdahl AM, Nilsson L and Rybo G (1966) Menstrual blood loss: a population study. *Acta Obstet Gynecol Scand* 45,320–351.
- Hemingway H, Crook AM, Feder G, Banerjee S, Dawson JR, Magee P, Philpott S, Sanders J, Wood A and Timmis AD (2001) Under use of coronary revascularization procedures in patients considered appropriate candidates for revascularization. *New Engl J Med* 344,645–654.
- Matsumoto S, Nogani Y and Ohkuri S (1962) Statistical studies on menstruation: a criticism of the definition of normal menstruation. *Gunma J Med Sci* 11,294–318.
- Munro MG (2000) Medical management of abnormal uterine bleeding. *Obstet Gynecol Clin North Am* 27,287–304.
- Munster K, Schmidt L and Helm P (1992) Length and variation in the menstrual cycle—a cross-sectional study from a Danish county. *Br J Obstet Gynaecol* 99,422–429.
- New Zealand Working Party for Guidelines for the Management of Heavy Menstrual Bleeding (1999) An evidence-based guideline for the management of heavy menstrual bleeding. *NZ Med J* 112,174–177.
- Park RE, Fink A, Brook RH, Chassin MR, Kahn KL, Merrick NJ, Koscoff J and Solomon DH (1986) Physician ratings of appropriate indications for six medical and surgical procedures. *Am J Public Health* 76,766–772.
- Rodriguez G, Faundes-Latham A and Atkinson LE (1976) An approach to the analysis of menstrual patterns in the critical evaluation of contraceptives. *Stud Fam Plann* 7,42–51.
- Ruta DA, Garratt AM, Chadha YC, Flett GM, Hall MH and Russell IT (1995) Assessment of patients with menorrhagia: how valid is a structured clinical history as a measure of health status? *Qual Life Res* 4,33–40.
- Shekelle PG, Park RE, Kahan JP, Leape LL, Kamberg CJ and Bernstein SJ (2001) Sensitivity and specificity of the RAND/UCLA Appropriateness Method to identify the overuse and under use of coronary revascularization and hysterectomy. *J Clin Epidemiol* 54,1004–1010.
- Snowden R and Christian B (eds) (1983) *Patterns and Perceptions of Menstruation (A World Health Organization international study)*. Croom Helm, London, p. 339.
- Treloar AE, Boynton RE, Behn BG and Brown BW (1967) Variation of the human menstrual cycle through reproductive life. *Int J Fertil* 12,77–126.
- Vader JP, Pache I, Froehlich F, Burnand B, Schneider C, Dubois RW, Brook RH and Gonvers JJ (2000) Overuse and underuse of colonoscopy in a European primary care setting. *Gastrointest Endosc* 52,593–599.
- Vollman RF (1977) *The Menstrual Cycle*. WB Saunders, Philadelphia, p. 193.
- Warner PE, Critchley HOD, Lumsden MA, Douglas A, Campbell-Brown M and Murray GD (2001) Referral for menstrual problems: cross-sectional survey of symptoms, reasons for referral and management. *BMJ* 3,24–28.
- Warner PE, Critchley HOD, Lumsden MA, Campbell-Brown M, Douglas A and Murray GD (2004) Menorrhagia II: is the 80 mL criterion useful in management of complaint of menorrhagia? *Am J Obstet Gynecol* 190,1224–1229.

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