

A process designed to lead to international agreement on terminologies and definitions used to describe abnormalities of menstrual bleeding*

Ian S. Fraser, M.D.,^a Hilary O. D. Critchley, M.D.,^b Malcolm G. Munro, M.D.,^c and Michael Broder, M.D.^d (Writing Group for this Menstrual Agreement Process)

^a Department of Obstetrics and Gynaecology, University of Sydney, New South Wales, Australia; ^b Section of Obstetrics and Gynaecology, Department of Reproductive and Developmental Sciences, University of Edinburgh, Edinburgh, United Kingdom; ^c Department of Obstetrics and Gynecology, University of California, Los Angeles, Los Angeles, California; and ^d Partnership for Health Analytic Research, Beverly Hills, California

Background: There is considerable worldwide confusion in the use of terminologies and definitions around the symptom of abnormal uterine bleeding, and these are leading increasingly to difficulties in setting up multinational clinical trials and in interpreting the results of studies undertaken in single centers.

Objective: To develop an agreement process through an international initiative to recommend clear, simple terminologies and definitions that have the potential for wide acceptance.

Design: After widespread consultation with relevant international and national organizations, journal editors, and individuals, a modified Delphi process was developed to assess current use of terminologies, followed by a structured face-to-face meeting of 35 clinicians (mostly gynecologists) and scientists in Washington, DC. Focused small-group discussions led to plenary assessment of concepts and recommendations by using an electronic keypad voting system.

Setting: An international group of experts on disorders of menstruation.

Patient(s): Women with complaint of menstrual symptoms.

Intervention(s): An international debate and consultation process.

Main Outcome Measure(s): Expert debate and anonymous voting on agreement through use of electronic keypads.

Result(s): There was almost-universal agreement that poorly defined terms of classical origin that are 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 that have the potential to be understood by health professionals and patients alike and that can be translated into most languages. The major recommendations were to replace terms such as *menorrhagia*, *metrorrhagia*, *hypermenorrhea*, and *dysfunctional uterine bleeding*. Suggestions for potentially suitable replacement terms and definitions are made.

Conclusion(s): A simple terminology has been recommended for the description and definition of symptoms and signs of abnormal uterine bleeding. This article 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. (Fertil Steril® 2007;87:466-76. ©2007 by American Society for Reproductive Medicine.)

Key Words: Abnormal uterine bleeding, menstruation, menorrhagia, dysfunctional uterine bleeding, terminology, definitions

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 gynecologists within a single practice setting (1). 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 increasingly have been discarded in many fields of medicine. Several terms with Greek and Latin roots still are extensively used in the English language to describe different abnormalities of menstrual bleeding, and the most widely used of these include *menorrhagia*, *metrorrhagia*, *menometrorrhagia*, *hypermenorrhea*, *polymenorrhea*, *oligomenorrhea*, and *amenorrhea* (1, 2). Unfortunately, most of these terms are ill defined and may

Received January 4, 2007; revised and accepted January 4, 2007.

*This article is published simultaneously in *Human Reproduction* (Vol. 22, No. 3, pp 635-43).

Supported by an unrestricted educational grant to the Association of Academic Health Centers from TAP Pharmaceuticals (Chicago, IL) and Schering AG (Berlin, Germany).

Reprint requests: Ian S. Fraser, DO2, Queen Elizabeth II Research Institute for Mothers and Infants, Department of Obstetrics and Gynaecology, University of Sydney, New South Wales 2006, Australia (FAX: 61-2-9351-4560; E-mail: helena@med.usyd.edu.au).

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) also are considered (3–6).

An examination of terminologies and definitions that are used for abnormalities of menstrual bleeding presupposes an understanding of the characteristics that are associated with normal menstruation (such as regularity, frequency, duration, volume, and other bleeding characteristics). Yet despite several reasonably large-scale population studies of various menstrual characteristics (7–13), there still is a lack of general awareness of what criteria should be used to define normality (14).

A similar lack of uniformity in cervical cancer staging led the International Federation of Gynecology and Obstetrics to establish a cervical cancer staging system in the 1920s. The success of that staging system is reflected in its continued use and in the publication of similar systems for other gynecological cancers (15). 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 gynecological cancers and those used 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 important, 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 also was explored.

MATERIALS AND METHODS

We used a carefully scrutinized, multistage process to improve the level of agreement on common terminology for menstrual disorders. The process began with 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 that commonly are used to describe disturbances of menstruation: *abnormal uterine bleeding*, *menorrhagia*, and *dysfunctional uterine bleeding* (2). These terms were selected because we believed that they represented three of the most commonly used 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 or-

ganized a Delphi panel by using a validated modification of the RAND/UCLA panel method to examine these disagreements. The Delphi panel approach is a nominal group process that is designed to elicit opinion about a clearly defined topic (16). A group of panelists is presented with a series of items that they rate anonymously and independently by using a numerical scale. The aggregate ratings are then shared with the entire group at a face-to-face meeting. After discussion, the panelists rerate 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).

The Delphi process has been used extensively to develop clinical guidelines on such topics as coronary revascularization, hysterectomy, and colonoscopy (17–19). Guidelines developed by using the modified Delphi process are reliable, and their clinical use may improve outcomes (20). For example, underuse of coronary revascularization identified by using expert panel guidelines was associated with worse clinical outcomes than was appropriate use (19). 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 panelists were selected to represent the international community of obstetrician-gynecologists and related clinicians and scientists, with an emphasis on including participants from developing as well as 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 panelists' beliefs about current classification of and terminology for bleeding disorders. The survey also asked panelists 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 either that >80% of respondents rated the item "agree" or "strongly agree" or that >80% rated it "disagree" or "strongly disagree". For example, if the rating scale was 1, strongly disagree; 2, disagree; 3, agree; and 4, strongly agree, then we considered the panelists 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 as an *A*, and lack of agreement, as a *D*.

The panelists met in person for 2 and a half days in February 2005 in Washington, DC to discuss the survey results and work toward 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 article. The face-to-face meeting also entered preliminary discussions on matters related to investigations and to cultural and quality-of-life issues, topics that led 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 that were dedicated to particular aspects of classification and terminology.

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

RESULTS

Premeeting Survey

Twenty-nine of 31 participants returned their premeeting 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 article. Classification issues will be addressed in a separate article. We mailed 35 demographic surveys (this included 4 observers), and 22 (63%) panelists responded fully; partial information was available from the remainder. Respondents represented 14 countries, with 12 from the United States, 4 from the United Kingdom, 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, the International Federation of Gynecology and Obstetrics, and National Colleges and Societies. However, these individuals were not formally representing the views of their organizations. The majority (80%) currently were spending at least some time in clinical practice and had been practicing for an average of 25 years (range, 7–40 y). Most active clinicians (19/25) practiced in large cities, and the remainder, in smaller cities.

In the premeeting survey, panelists agreed on only 26 of the 60 items that 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), 2 of the agreements related to DUB (16 items total), and 7 related to menorrhagia (16 items total).

Participants were asked specifically about their personal understanding of the three terms *abnormal uterine bleeding*, *dysfunctional uterine bleeding*, and *menorrhagia* as symptoms, signs, or diagnoses (Table 1). A high proportion responded that *abnormal uterine bleeding* is a symptom or sign but not a diagnosis (75%), but 21% believed that it could be a symptom, sign, or diagnosis, and 4% believed it referred only to a diagnosis. Responses regarding the definitions and usage of *dysfunctional uterine bleeding* and *menorrhagia* were more varied. A small majority believed that *dysfunctional uterine bleeding* is a diagnosis and not a symptom or sign (59%), whereas 33% believed 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% believed that it is a diagnosis and not a symptom or sign. Twenty-two percent believed they could use *menorrhagia* as a symptom, sign, or diagnosis.

TABLE 1

Premeeting survey: statements relating to the usage of three terms as descriptions of symptoms or signs of abnormal bleeding or indicative of an underlying diagnosis.

	AUB n (%) ^a	DUB n (%)	Menorrhagia n (%)
Respondent believes the term describes a sign or symptom but is not a diagnosis	21 (75)	2 (8)	18 (64)
Respondent believes the term is a diagnosis and not a descriptive term	1 (4)	16 (59)	4 (14)
Respondent believes the term can be a descriptive term or a diagnosis	6 (21)	9 (33)	6 (22)

^a Not all respondents answered every question.

Fraser. International definitions of abnormal menstrual bleeding. *Fertil Steril* 2007.

TABLE 2

Premeeting survey: usage of three different terms in relation to different presentations of abnormal uterine bleeding.

	AUB n (%)	DUB n (%)	Menorrhagia n (%)
Refers only to abnormally heavy bleeding	1 (4)	3 (11)	26 (96)
Refers only to abnormally timed bleeding	0	2 (7)	0
Refers only 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 either abnormally heavy, abnormally timed, or abnormally light	12 (44)	10 (38)	0

Fraser. International definitions of abnormal menstrual bleeding. *Fertil Steril* 2007.

The participants in the process also were asked about the symptoms that they associated with the terms *abnormal uterine bleeding*, *dysfunctional uterine bleeding*, and *menorrhagia* (Table 2). Although the majority (96%) agreed that menorrhagia related only to abnormally heavy bleeding of some type, a substantial minority believed that both *abnormal uterine bleeding* (44%) and *dysfunctional uterine bleeding* (38%) could relate to abnormally heavy, abnormally timed, or abnormally light bleeding.

Panelists were asked what standards they currently used in a clinical setting for determining the presence of AUB, DUB, and menorrhagia (Table 3), 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, *abnormal uterine bleeding*, *dysfunctional uterine bleeding*, and *menorrhagia*, and other descriptive terms for menstrual symptoms or conditions were explored

(Table 4). With regard to *abnormal uterine bleeding*, a minority responded that this term encompasses reduced bleeding symptoms (hypomenorrhea and oligomenorrhea) and postcoital bleeding, but almost all believed it encompassed the remaining terms. There was a predominant view that the term *menorrhagia* encompasses hypermenorrhea, but not the other relationships. There was no predominant view regarding *dysfunctional uterine bleeding*, except that most responded that it did not include postcoital bleeding.

Second-Round Survey During Conference

During the course of the face-to-face meeting and after 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 5). All now agreed that *abnormal uterine bleeding* is not a diagnosis but describes a sign or symptom. There was now agreement that *abnormal uterine bleeding* should come

TABLE 3

Premeeting survey: participant responses to the statements that best describe the minimum standard they currently use for determining the presence of AUB, DUB, or menorrhagia.

	AUB n (%)	DUB n (%)	Menorrhagia n (%)
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)

Fraser. International definitions of abnormal menstrual bleeding. *Fertil Steril* 2007.

TABLE 4

Premeeting survey: beliefs about the relationship between AUB, DUB, menorrhagia, and a range of terms used to describe different menstrual symptoms or conditions.

	AUB	DUB	Menorrhagia
Menorrhagia	96	75	—
Hypermenorrhoea	93	71	96
Polymenorrhoea	93	68	25
Metrorrhagia	96	71	14
Menometrorrhagia	93	75	36
Hypomenorrhoea	46	29	0
Oligomenorrhoea	43	39	0
Intermenstrual bleeding	89	43	0
Postcoital bleeding	46	14	0
AUB	—	50	29
DUB	96	—	25

Note: All values are expressed as the percentage of participants who believed that AUB, DUB, and menorrhagia encompass the items listed in the left-hand column.

Fraser: International definitions of abnormal menstrual bleeding. Fertil Steril 2007.

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 *abnormal uterine bleeding* to describe all abnormal menstrual signs and symptoms arising from the uterine corpus, but there was 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 *dysfunctional uterine bleeding*, *metrorrhagia*, and *meno-metrorrhagia* should be discarded. An e-mail poll shortly after 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 5).

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 5). This range has been estimated to be from 22–35 days (in the mid-reproductive years in several studies [21]). 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 to 95th percentile, but there is no

evidence to provide a threshold for determining an unacceptable level of change. The panel believed that age and population-specific estimates of the normal menstrual parameters should be used, if available (7, 21). 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 by using a specified simple list of dimensions and that there should be only three choices of descriptive words for each dimension: *normal*, as well as terms describing levels beyond and below it (Table 6). They also agreed on the four key menstrual dimensions, to be specified as follows:

1. *Cycle regularity*: irregular, regular, or absent;
2. *Frequency of menstruation*: frequent, normal, or infrequent;
3. *Duration of menstrual flow*: prolonged, normal, or shortened; and
4. *Volume of menstrual flow*: heavy, normal, or light.

Any additional abnormality also should be specified (e.g., change in the menstrual pattern, intermenstrual bleeding, premenstrual spotting).

The concept of menstrual shape also was discussed, such that the patient's perception of the pattern of changes in volume from day to day is recorded (21). It was believed that there are so few data available about this concept that it cannot currently be incorporated into a menstrual assessment scheme, although research on the topic clearly is needed.

DISCUSSION

The strongest conclusion arising from this process was that most English-language menstrual terminologies with Greek or Latin roots are so ill defined that they should be discarded, and simple descriptive terms that could be understood by patients and translated into most languages should be used instead (Table 6). 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 (22, 23), with simple key words used to describe the most important features (e.g., “heavy, irregular menstrual bleeding”).

In Table 6, 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, with recognition that these are directly from patient complaint and highly subjective. These descriptors 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” (24). Clearly, there

TABLE 5

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

	Strongly agree (n)	Agree (n)	Disagree (n)	Strongly disagree (n)	Panel rating ^a
Terminology					
AUB describes a sign or symptom	30	0	0	0	A+
AUB belongs under the umbrella term <i>abnormal reproductive tract bleeding</i>	24	6	0	0	A+
The term DUB should be discarded	26	3	2	0	A
The term metrorrhagia should be discarded	27	4	0	0	A+
The term menometrorrhagia 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 nonpregnant women	20	6	3	1	A
Definition of abnormal					
Menses occurring more or less often than the 5 th and 95 th percentile are abnormal	20	8	1	1	A
Duration of flow outside the 5 th and 95 th percentile 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 A+ = unanimous; A = ≥80% agreement; D = <80% agreement.

Fraser. *International definitions of abnormal menstrual bleeding. Fertil Steril* 2007.

is an important clinical interface in which common understanding of terminologies is critical to good communication.

The term *excessive* deliberately has been omitted from the description of heavy bleeding because of the additional uncertainties and lack of definition of this word. The New Zealand Guidelines for the Management of Heavy Menstrual Bleeding were the first to clearly recognize and use the terminology *heavy* (25). However, it was recognized that there will be a minority of women who present with the complaint of heavy bleeding and who will have a strong history of very heavy bleeding supported by iron-deficiency anemia and may therefore merit this label. Nevertheless, the participants strongly believed that the parameters of normality for the menstrual cycle and menstruation could probably be realistically set at the 5th to 95th centiles from population studies (1, 26). This would allow the definition of *heavy*

to be above the 95th centile of the normal population and that of *light* to be below the 5th centile. This issue of normality of the menstrual cycle needs to be further addressed in future discussions, especially because 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, in which attempts at objective measurement are unrealistic, and the research situation, in which objective measurement may be critical. This topic is itself a matter for urgent and practical research investigation. There also will be clinical situations in which a woman with, say, prolonged bleeding beyond the 95th centile is investigated and no pathology is found. A functional (perhaps of some local molecular system) anomaly is assumed, but no active therapy may be

TABLE 6

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

Descriptive terms	Strongly agree (n)	Agree (n)	Disagree (n)	Strongly disagree (n)	Panel rating ^a
1. Regularity (periodicity):	28	2	1	0	A
terms include <i>regular</i> , <i>irregular</i> , and <i>absent</i>	25	4	1	1	A
2. Duration of flow:	29	1	1	0	A
terms include <i>prolonged</i> , <i>normal</i> , and <i>shortened</i>	25	5	1	0	A
3. Frequency:	26	4	1	0	A
terms include <i>frequent</i> , <i>normal</i> , and <i>infrequent</i>	22	4	3	1	A
4. Volume:	27	3	1	0	A
terms include <i>heavy</i> , <i>normal</i> , and <i>light</i>	27	3	1	0	A

Note: The descriptive terms for the four main components of bleeding were assessed for agreement separately from the three subterms within each component.

^a A+ = unanimous; A = ≥80% agreement; D = <80% agreement.

Fraser. International definitions of abnormal menstrual bleeding. *Fertil Steril* 2007.

required, yet she may still be considered to be outside the range of normality. Conversely, there will be some women who have heavy bleeding that is considered to be within the 95th centile but who still have anemia, perhaps as a consequence of dietary deficiencies. Such a woman's 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 of heavier, so-called normal menstruation and even to seek a bleed-free lifestyle. The issues of perception and tolerance may be important factors in determining a complaint of heavy bleeding, when measured blood loss would be well within 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 6) and that a structured menstrual history then should clarify the few simple facts related by the woman and on which the summary description of symptoms was based (22, 23). Sufficient published population data exist in the literature to allow a provisional estimate of the 5th to 95th centiles for the dimensions of the normal cycle and normal menstruation (21), 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 also ethnically related changes (21), in menstruation.

Suggested normal limits for the four main clinical dimensions of menstruation and the menstrual cycle are summarized in Table 7, mainly on the basis of published data

and, where possible, 5th to 95th centiles. These have been developed after the face-to-face meeting and based primarily on the independent World Health Organization analysis (4) of the unique and very extensive menstrual record database developed by Treloar and the Tremin Trust (7). After careful exclusion of inappropriate records and obvious errors, 6,375 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 centile limit for regularity of menses is almost certainly skewed by the proportion of women in the community who have infrequent and irregular bleeding caused by common variants of the polycystic ovary syndrome. It can be argued that a more realistic upper limit of normality for determining regularity could be taken as the 75th centile (a variation of around 20 d between the shortest and longest cycle that has been experienced by an individual during the course of 1 y). This also requires prospective review.

Suggestions for the limits of normality of volume of monthly measured menstrual blood loss (Table 7) have been based primarily on research measurements of hemoglobin loss in a Swedish community by Hallberg et al. (11). 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 International Federation of Gynecology and Obstetrics, on further development of the proposals embodied in this document.

TABLE 7**Suggested “normal” limits for menstrual parameters in the midreproductive years.**

Clinical dimensions of menstruation and menstrual cycle	Descriptive terms	Normal limits (5th to 95th percentiles)
Frequency of menses (d)	Frequent	<24
	Normal	24–38
	Infrequent	>38
Regularity of menses, cycle-to-cycle variation over 12 mo (d)	Absent	–
	Regular	Variation ± 2–20 days
	Irregular	Variation >20 days
Duration of flow (d)	Prolonged	>8.0
	Normal	4.5–8.0
	Shortened	<4.5
	Heavy	>80
Volume of monthly blood loss (mL)	Normal	5–80
	Light	<5

Note: Limits are based primarily on the data of Treloar et al. (7), Hallberg et al. (11), Snowden and Christian (21), and Belsey and Pinol (26).

Fraser. International definitions of abnormal menstrual bleeding. Fertil Steril 2007.

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

It is clear that lack of internationally agreed terminologies for menstrual symptoms, signs, and diagnoses has 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 World Health Organization have invested considerable effort into defining limits for a range of terms to objectively describe the unpredictable patterns of breakthrough bleeding that commonly occur in women who are using long-acting hormonal contraceptives (4, 27, 28). These simple descriptive terminologies have important overlap with the proposals in this article (29).

The gynecological oncology staging systems of the International Federation of Gynecology and Obstetrics and of the World Health Organization have demonstrated ways of simplifying clinical and basic research and improving clinical care of women with gynecological cancers by creating uniform structures for terminologies, definitions, and

classifications (15). These staging systems gradually have been 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 that 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*) that are 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 redefined and focused on an international scale. The term *dysfunctional uterine bleeding* has been included in this group of terminologies meriting abandonment for similar reasons. The justification for recommending abandonment of the terms *menorrhagia* and *dysfunctional uterine bleeding* is summarized in Tables 8 and 9.

Suggested replacement terminologies for most of the abandoned terms describing symptoms have been summarized in Table 6. The case of *dysfunctional uterine bleeding* is a little different because physicians in most parts of the world have

TABLE 8

Justification for discontinuing use of the term *menorrhagia*.

- A confusing term with Latin and Greek roots that is loosely defined in the English medical language but that most physicians use to describe some aspect of heavy menstrual bleeding
- Used equally as a symptom, a sign, or a diagnosis in the United States
- Used solely as a symptom or sign in most other parts of the world
- Used solely to describe “regular” heavy bleeding in the United States
- Encompasses regular and irregular heavy bleeding elsewhere
- Encompasses prolonged (but not necessarily heavy) bleeding for some clinicians
- Conveys a sense of excessively heavy bleeding to most physicians
- More often encompasses a complaint of merely “heavy” (i.e., not excessive) bleeding for most women
- Women in most countries do not understand the term *menorrhagia*

Fraser. International definitions of abnormal menstrual bleeding. *Fertil Steril* 2007.

used this as a diagnosis rather than a symptom (4), and full consideration of possible suitable replacement terms is more appropriate in the companion discussion article (currently in preparation) from the Washington, DC meeting on classifications of causes of AUB. In reality, *dysfunctional uterine bleeding* is a term that primarily is used 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 after 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 article on classifications.

It is recommended that this initial attempt by a group of experienced clinicians, mainly gynecologists, 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

TABLE 9

Justification for discontinuing use of the term *dysfunctional uterine bleeding*.

- 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 United States
- Used predominantly as a diagnosis in most countries
- Refers solely to anovulatory (i.e., irregular) bleeding, which is not necessarily heavy, in the United States
- Can be used to describe both ovulatory (i.e., regular) or anovulatory (i.e., irregular) heavy bleeding in most other countries
- The term is not understood by women

Fraser. International definitions of abnormal menstrual bleeding. *Fertil Steril* 2007.

decisions by this group gives hope that widespread international agreement on terminologies can be rapidly achieved and disseminated. The most difficult issue probably will be the determination of how the limits of normality of menstruation and the menstrual cycle can be set. The International Federation of Gynecology and Obstetrics has agreed to support the establishment of a study group to further explore the points of agreement and 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 that may impact the use and understanding of terminologies, definitions, and classifications.

In conclusion, because 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 *dysfunctional uterine bleeding* also should be discarded. It appears 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 that cover regularity of the cycle, frequency of menstruation, and volume and duration of the menstrual flow. Ideally, these terms also should 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 that includes classifications, investigations, and consideration of cultural and quality-of-life issues.

Acknowledgments: The authors are most appreciative of the encouragement that this process has been given by a number of organizations, including the International Federation of Gynecology and Obstetrics, the Department of Reproductive Health and Research of the World Health Organization, the American Society for Reproductive Medicine, the European Society for Human Reproduction and Embryology, the editors of a number of relevant clinical journals, and a number of specialist colleges and national societies. The authors are grateful to John Strapp, Lisa Micarelli, and The JL Company (New York, NY) for very efficient administration of this process.

REFERENCES

- Fraser IS, Inceboz US. Defining disturbances of the menstrual cycle. In: O'Brien PMS, Cameron I, MacLean AB, eds. Disorders of the menstrual cycle. 1st ed. London: RCOG Press, 2000:141–52.
- Woolcock J, Critchley HOD, Munro MG, Farquhar C, Fraser IS. A comprehensive review of the worldwide confusion on menstrual terminology, definitions and classifications. *Hum Reprod*. In press.
- Aksel S, Jones GS. Etiology and treatment of dysfunctional uterine bleeding. *Obstet Gynecol* 1974;44:1–13.
- Crosignani PG, Rubin B. Review and guidelines on dysfunctional uterine bleeding. Study Group of the European Society of Human Reproduction and Embryology. *Hum Reprod* 1990;5:637–8.
- Bayer SR, DeCherney AH. Clinical manifestations and treatment of dysfunctional uterine bleeding. *JAMA* 1993;269:1823–8.
- Munro MG. Medical management of abnormal uterine bleeding. *Obstet Gynecol Clin North Am* 2000;27:287–304.
- Treloar AE, Boynton RE, Behn BG, Brown BW. Variation of the human menstrual cycle through reproductive life. *Int J Fertil* 1967;12:77–126.
- Vollman RF. The menstrual cycle. Philadelphia: WB Saunders, 1977: 193.
- Matsumoto S, Nogani Y, Ohkuri S. Statistical studies on menstruation: a criticism of the definition of normal menstruation. *Gunma J Med Sci* 1962;11:294–318.
- Chiazze L, Brayer FT, Macisco J. The length and variability of the human menstrual cycle. *J Am Med Assoc* 1968;203:377–85.
- Hallberg L, Hogdahl AM, Nilsson L, Rybo G. Menstrual blood loss; a population study. *Acta Obstet Gynecol Scand* 1966;45:320–51.
- Cole SK, Billewicz WZ, Thompson AM. Sources of variation in menstrual blood loss. *J Obstet Gynaecol Br Commonw* 1971;78:933–9.
- Munster K, Schmidt L, Helm P. Length and variation in the menstrual cycle—a cross-sectional study from a Danish county. *Br J Obstet Gynaecol* 1992;99:422–9.
- Warner PE, Critchley HOD, Lumsden MA, Campbell-Brown M, Douglas A, Murray GD. Menorrhagia II: is the 80-mL criterion useful in management of complaint of menorrhagia? *Am J Obstet Gynecol* 2004;190:1224–9.
- Benedet JL, Bender H, Jones H 3rd, Ngan HY, Pecorelli S. FIGO staging classifications and clinical practice guidelines in the management of gynecologic cancers. FIGO Committee on Gynecologic Oncology. *Int J Gynaecol Obstet* 2000;70:207–312.
- Brook RH, Chassin MR, Fink A, Solomon DH, Koseoff J, Park RE. A method for the detailed assessment of the appropriateness of medical technologies. *Int J Technol Assess Health Care* 1986;2:53–63.
- Park RE, Fink A, Brook RH, Chassin MR, Kahn KL, Merrick NJ, et al. Physician ratings of appropriate indications for six medical and surgical procedures. *Am J Public Health* 1986;76:766–72.
- Vader JP, Pache I, Froehlich F, Burnand B, Schneider C, Dubois RW. Overuse and underuse of colonoscopy in a European primary care setting. *Gastrointest Endosc* 2000;52:593–9.
- Hemingway H, Crook AM, Feder G, Banerjee S, Dawson JR, Magee P, et al. Under use of coronary revascularization procedures in patients considered appropriate candidates for revascularization. *N Engl J Med* 2001;344:645–54.
- Shekelle PG, Park RE, Kahan JP, Leape LL, Kamberg CJ, Bernstein SJ. Sensitivity and specificity of the RAND/UCLA Appropriateness Method to identify the overuse and under use of coronary revascularization and hysterectomy. *J Clin Epidemiol* 2001;54:1004–10.
- Snowden R, Christian B, eds. Patterns and perceptions of menstruation (a World Health Organization international study). London: Croom Helm, 1983:339.
- Ruta DA, Garratt AM, Chadha YC, Flett GM, Hall MH, Russell IT. Assessment of patients with menorrhagia: how valid is a structured clinical history as a measure of health status? *Qual Life Res* 1995;4:33–40.
- Warner PE, Critchley HOD, Lumsden MA, Douglas A, Campbell-Brown M, Murray GD. Referral for menstrual problems: cross-sectional survey of symptoms, reasons for referral and management. *BMJ* 2001;3: 24–8.
- Fraser IS. Menorrhagia: a pragmatic approach to the understanding of causes and the need for investigations. *Br J Obstet Gynaecol* 1994;101(Suppl 11):3–7.
- New Zealand Working Party for Guidelines for the Management of Heavy Menstrual Bleeding. An evidence-based guideline for the management of heavy menstrual bleeding. *NZ Med J* 1999;112: 174–7.
- Belsey EM, Pinol AP. Menstrual bleeding patterns in untreated women. Task Force on Long-Acting Systemic Agents for Fertility Regulation. *Contraception* 1997;55:57–65.
- Rodriguez G, Faundes-Latham A, Atkinson LE. An approach to the analysis of menstrual patterns in the critical evaluation of contraceptives. *Stud Fam Plann* 1976;7:42–51.
- Belsey EM, Machin D, d'Arcangues C. The analysis of vaginal bleeding patterns induced by fertility regulating methods. *Contraception* 1986;34: 253–60.
- Fraser IS. Bleeding arising from the use of exogenous steroids. *Baillieres Best Pract Res Clin Obstet Gynaecol* 1999;13:203–22.

APPENDIX

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 article. Their names are listed alphabetically. None of the individuals formally represented the views of their organizations.

David F. Archer (gynecologist and reproductive endocrinologist, East Virginia Medical School, Norfolk, VA),

Vivian Brache (scientist, Profamilia, Santo Domingo, Dominican Republic),

Andrew Brill (gynecologist, University of Illinois, Chicago, IL),

Michael Broder (gynecologist and health outcomes researcher, Partnership for Health Analytic Research, Los Angeles, CA),

Ivo Brosens (gynecologist, Catholic University of Leuven, Leuven, Belgium),

Kris Chwalisz (endocrinologist, TAP Pharmaceuticals, Chicago, IL),

Hilary Critchley (gynecologist and reproductive endocrinologist, Co-Chair, University of Edinburgh, Edinburgh, United Kingdom),

Catherine d'Arcangues (medical officer, Department of Reproductive Health and Research, World Health Organization, Geneva, Switzerland),

- Margit Dueholm (gynecologist and imaging specialist, Aarhus University Hospital, Aarhus, Denmark),
- Cynthia Farquhar (gynecologist, University of Auckland, Coordinating Editor of the Cochrane Menstrual Disorders and Subfertility Group, Auckland, New Zealand),
- Ian Fraser (gynecologist and reproductive endocrinologist, Co-Chair, University of Sydney, Sydney, Australia),
- Marc Fritz (reproductive endocrinologist, University of North Carolina, Chapel Hill, NC),
- Jennifer Higham (gynecologist, Imperial College, London, United Kingdom),
- William Hurd (gynecologist, *Fertility and Sterility*),
- Julia Johnson (gynecologist, American College of Obstetricians and Gynecologists, Washington, DC),
- Lee Learman (gynecologist, University of California at San Francisco, San Francisco, CA),
- Charles Lockwood (gynecologist, Yale University, New Haven, CT),
- Andrea Lukes (gynecologist, Duke University, Durham, NC),
- Ian Milsom (gynecologist, Sahlgrenska University Hospital, Gothenburg, Sweden),
- Andrew Mok (gynecologist, McGill University, Montreal, Quebec, Canada),
- Malcolm G. Munro (gynecologist, Co-Chair, David Geffen School of Medicine, University of California, Los Angeles, and Kaiser Permanente Southern California, Los Angeles, CA),
- Shaughn O'Brien (gynecologist, Keele University School of Medicine, Staffordshire, United Kingdom; Royal College of Obstetricians and Gynecologists, United Kingdom),
- David Olive (gynecologist, University of Wisconsin, Madison, WI),
- Elisabeth Persson (gynecologist, Karolinska University Hospital, Stockholm, Sweden),
- Robert Rebar (reproductive endocrinologist, Executive Director, American Society for Reproductive Medicine, Birmingham, AL),
- Robert Schenken (gynecologist, 2005 president, American Society of Reproductive Medicine, Birmingham, AL),
- Dorothy Shaw (gynecologist, president-elect, International Federation of Gynecology and Obstetrics; University of British Columbia, Vancouver, British Columbia, Canada),
- Shirish Sheth (gynecologist, past president of International Federation of Gynecology and Obstetrics; Mumbai, India),
- James B. Spies (interventional radiologist; Georgetown University, Washington, DC),
- Elizabeth A. Stewart (gynecologist and reproductive endocrinologist, Harvard Medical School, Boston, MA),
- Zephne van der Spuy (gynecologist, University of Cape Town, Cape Town, South Africa),
- Paolo Vercellini (gynecologist, European Society for Human Reproduction and Embryology; Istituto Luigi Mangiagalli, University of Milan, Milan, Italy),
- Kirsten Vogelsson (scientist, Department of Reproductive Health and Research, World Health Organization, Geneva, Switzerland), and
- Pamela Warner (health services researcher, University of Edinburgh, Edinburgh, United Kingdom).