

Supplementary Material

Title: The Menstrual Cycle as a Vital Sign: a comprehensive review

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Supplementary Material:

1. Search Strategy
2. Supplementary Table S1. Clinical practice reference list: practice guidelines and clinical practice reviews cited in this paper and organized by subject
3. Patient educational handouts:
 - a) How to track your menstrual cycle
 - b) Menstrual cycle tracking chart: example chart and blank chart

Search Strategy

For each of the article’s core terms and main subsections, we developed a list of concept terms and used key word and controlled vocabulary searches in the PubMed database to search for current systematic reviews, meta-analyses, or clinical practice guidelines published since 2020 covering the topic. If such literature was unavailable, we searched for original research published since 2020 and earlier reviews from 2010-2020. Concept terms, MeSH terms, and search strategies for each subsection are included here. As we prioritized searching for systematic reviews, meta-analyses, or clinical practice guidelines, the following filters were applied to the searches below: Meta-Analysis, Practice Guideline, Review, Systematic Review, Humans. Articles were screened using title and abstract. Studies were also identified through bibliographic review. During full text review, we also screened for study type, prioritizing the inclusion of high-quality systematic reviews, meta-analyses, clinical practice guidelines, and sentinel research studies. Practice guidelines and reviews with a clinical practice emphasis included in this review also are listed by topic in table S1 for further clinical reference.

Key core term: Menstrual cycle

Core term: Menstrual cycle	
Concept terms	MeSH terms
menstrual cycle, menstrual period, menses, menstruation, ovarian cycle, endometrial cycle, uterine cycle, menstrual cycle length, menstrual bleeding, menstrual cycle characteristics, menstrual irregularity, menstrual cycle pattern, menstrual abnormality	Menstrual cycle Menstruation disturbances
Search strategy	
("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])	

Subsection: The menstrual cycle is a health indicator

Core term: Endocrine disorders	
Concept terms	MeSH terms
endocrine disorders, endocrine disease, endocrine disturbance, ovulatory dysfunction, ovarian disease, ovarian insufficiency, polycystic ovarian syndrome, PCOS, thyroid disease, hypothyroid*, hyperthyroid*, diabetes, hypothalamic-pituitary-gonadal axis, HPG axis, hypothalamic-pituitary-ovarian axis, HPO axis	Endocrine System Diseases Hypothalamic-Pituitary-Gonadal Axis
Search strategy	

("endocrine disorder"[tiab] OR "endocrine disease"[tiab] OR "endocrine system diseases"[Mesh] OR "Hypothalamic-Pituitary-Gonadal Axis"[Mesh])
 AND
 ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])

Core term: Bleeding disorders	
Concept terms	MeSH terms
bleeding disorder, bleeding disease, bleeding problem, coagulation disorder, coagulation disease, disorder of hemostasis, blood coagulation disorder, blood clotting disorder	Blood Coagulation Disorders
Search strategy	
("bleeding disorder"[tiab] OR "bleeding disease"[tiab] OR "bleeding problem"[tiab] OR "coagulation disorder"[tiab] OR "coagulation disease"[tiab] OR "disorder of hemostasis"[tiab] OR "blood clotting disorder"[tiab] OR "blood coagulation disorder"[Mesh]) AND ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])	

Core term: Structural anomalies of the reproductive tract	
Concept terms	MeSH terms
uterine abnormality, cervical abnormality, vaginal abnormality, congenital abnormality of reproductive tract, structural abnormality of the reproductive tract, uterovaginal anomalies	Urogenital Abnormalities Uterus/abnormalities Vagina/abnormalities Cervix Uteri/abnormalities Uterine Duplication Anomalies Gynatresia
Search strategy	
("uterine abnormality"[tiab] OR "cervical abnormality"[tiab] OR "vaginal abnormality"[tiab] OR "congenital abnormality of the reproductive tract"[tiab] OR "structural abnormality of the reproductive tract"[tiab] OR "uterovaginal anomalies"[tiab] OR "Urogenital Abnormalities"[Mesh] OR "Uterus/abnormalities"[Mesh] OR "Vagina/abnormalities"[Mesh] OR "Cervix Uteri/abnormalities"[Mesh] OR "Uterine Duplication Anomalies" [Mesh] OR "Gynatresia"[Mesh]) AND ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])	

Core term: Neoplasms and cancer	
Concept terms	MeSH terms
neoplasm, cancer, carcinoma, reproductive tract, cervical dysplasia, cervical cancer, uterine malignancy, hematologic malignancy, fibroid, uterine fibroids, uterine leiomyoma, adenomyosis, endometrial polyp, cervical polyp	Endocrine Gland Neoplasms Leiomyoma Adenomyosis Endometrial Hyperplasia Uterine Cervical Diseases Uterine Neoplasms Genital Neoplasms, Female
Search strategy	
("Endocrine Gland Neoplasms"[Mesh] OR "Leiomyoma"[Mesh] OR "Adenomyosis"[Mesh] OR "Endometrial Hyperplasia"[Mesh] OR "Uterine Cervical Diseases"[Mesh] OR "Uterine Neoplasms"[Mesh] "Genital Neoplasms, Female"[Mesh]) AND ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])	

Core term: Infections	
Concept terms	MeSH terms
sexually transmitted infection, sexually transmitted disease, reproductive tract infection, vaginal infection, bacterial vaginosis, yeast infection, chlamydia, gonorrhea, cervicitis, pelvic inflammatory disease	Sexually transmitted diseases Reproductive tract infections Communicable diseases
Search strategy	
("Sexually Transmitted Diseases"[Mesh] OR "Reproductive Tract Infections"[Mesh] OR "Communicable Diseases"[Mesh]) AND ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])	

Subsection: Health conditions respond to the menstrual cycle

Core term: Health conditions that respond to the menstrual cycle	
Concept terms	MeSH terms
systemic disease, neurological disorders, migraines, headaches, epilepsy, mental health, mental disorders, depression, chronic pain,	Migraine disorders Epilepsy Mental disorders Asthma

fibromyalgia, rheumatoid arthritis, irritable bowel syndrome, asthma	Pain Chronic Pain Irritable Bowel Syndrome Inflammatory Bowel Diseases Rheumatic diseases
Search strategy	
<p>("neurological disorder"[tiab] OR "migraine"[tiab] "headache"[tiab] OR "migraine disorders"[Mesh] OR "epilepsy"[tiab] OR "catamenial epilepsy"[tiab] OR "epilepsy"[Mesh] OR "mental health"[tiab] OR "mental disorder"[tiab] OR "depression"[tiab] OR "mental disorders"[Mesh] OR "chronic pain"[tiab] OR "pain"[Mesh] OR "chronic pain"[Mesh] OR "fibromyalgia"[tiab] OR "rheumatoid arthritis"[tiab] OR "rheumatic diseases"[Mesh] OR "irritable bowel syndrome"[tiab] OR "irritable bowel syndrome"[Mesh] OR "inflammatory bowel diseases"[Mesh] OR "asthma"[tiab] OR "asthma"[Mesh] OR "systemic disease"[tiab])</p> <p>AND</p> <p>("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])</p>	

Subsection: Menstrual cycle characteristics are linked to long-term health outcomes

Core term: Long-term health outcomes	
Concept terms	MeSH terms
health outcomes, long-term health outcomes, long-term effects, health later in life, chronic disease, life course, life span, aging	Time Late Onset Disorders Chronic Disease Aging
Search strategy	
<p>("longterm effects"[tiab] OR "long term effects" [tiab] OR "long-term effects" [tiab] OR "longterm health outcomes"[tiab] OR "long term health outcomes"[tiab] OR "long-term health outcomes"[tiab] OR "health later in life"[tiab] OR "lifecourse"[tiab] OR "life course"[tiab] "life span"[tiab] OR ("time"[Mesh] OR "late onset disorders"[Mesh] OR "chronic disease"[Mesh] OR "aging"[Mesh])</p> <p>AND</p> <p>("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])</p>	

Core term: Specific long-term health outcomes	
Concept terms	MeSH terms
cardiovascular disease, heart disease, hypertension, dyslipidemia, metabolic disease, diabetes, bone health, bone mineral density,	Metabolic Diseases Cardiovascular diseases Autoimmune diseases

osteoporosis, fracture, cancer, mortality, autoimmune disease, anemia, pain	Anemia Pain Life expectancy Mortality Neoplasms
Search strategy	
<p>("cardiovascular disease"[tiab] OR "hypertension"[tiab] OR "dyslipidemia"[tiab] OR "diabetes"[tiab] OR "metabolic disease"[tiab] OR "bone health"[tiab] OR "osteoporosis"[tiab] OR "mortality"[tiab] OR "autoimmune disease"[tiab] OR "anemia"[tiab] OR "pain"[tiab] OR "Metabolic Diseases"[Mesh] OR "Cardiovascular diseases"[Mesh] OR "Autoimmune diseases"[Mesh] OR "Anemia"[Mesh] OR "Pain"[Mesh] OR "Life expectancy"[Mesh] OR "Mortality"[Mesh] OR "Neoplasms"[Mesh])</p> <p>AND</p> <p>("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle pattern"[tiab] OR "menstrual abnormality"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])</p>	

Subsection: Using the menstrual cycle to optimize wellness

Core term: Health promotion	
Concept terms	MeSH terms
wellness, good health, health-promoting, healthy, optimal health, wellbeing, health improvement, health promotion, healthy life style, health intervention, behavioral intervention, health adaptation	Life style Psychological well-being Health promotion Wellness programs Health behavior Healthy lifestyle Healthy diet
Search strategy	
<p>("Life Style"[Mesh] OR "Healthy Lifestyle"[Mesh] OR "Psychological Well-Being"[Mesh] OR "Health Promotion"[Mesh] OR "Healthy diet"[Mesh] OR "wellness"[tiab] OR "good health"[tiab] OR "health promotion"[tiab] OR "healthy"[tiab] OR "optimal health"[tiab] OR "wellbeing"[tiab] OR "well being"[tiab] OR "health improvement"[tiab] OR "healthy life style"[tiab])</p> <p>AND</p> <p>("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])</p>	

Core term: Fertility promotion	
Concept terms	MeSH terms
fertility, fertility awareness based methods, infertility, subfertility, female fertility	Fertility, human Natural Family Planning Methods Time to pregnancy
Search strategy	

("fertility"[MeSH Terms] OR "time to pregnancy"[MeSH Terms] OR "natural family planning methods"[MeSH Terms] OR "fertility"[tiab] OR "fertility awareness"[tiab])
 AND
 ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])

Core term: Contraception	
Concept terms	MeSH terms
contraception, birth control, fertility control, natural family planning, fertility awareness	Natural Family Planning Methods Contraception Family Planning Services
Search strategy	
("contraception"[Mesh] OR "contraception"[tiab] OR "birth control"[tiab] OR "fertility control"[tiab] OR "contraceptive methods"[tiab] OR "family planning services"[Mesh]) AND ("natural family planning methods"[MeSH Terms] OR "fertility awareness"[tiab]) AND ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])	

Core term: Exercise and physical activity	
Concept terms	MeSH terms
exercise, physical activity, exercise performance, exercise training, sports	Exercise Physical conditioning, human Sports Athletic performance Sports nutritional physiological phenomena
Search strategy	
("exercise"[Mesh] OR "physical conditioning, human"[Mesh] OR "sports"[Mesh] OR "athletic performance"[Mesh] OR "sports nutritional physiological phenomena"[Mesh] OR "exercise"[tiab] OR "exercise performance"[tiab] OR "exercise training"[tiab] OR "physical activity"[tiab]) AND ("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])	

Core term: Diet and nutrition	
Concept terms	MeSH terms
nutrition, diet, dietary patterns	Diet Nutritional requirements Sports nutritional physiological phenomena Feeding behavior

	Gastrointestinal absorption
Search strategy	
<p>("diet"[Mesh] OR "nutritional requirements"[Mesh] OR "sports nutritional physiological phenomena"[Mesh] OR "feeding behavior"[Mesh] OR "gastrointestinal absorption"[Mesh] OR "diet"[tiab] OR "nutrition"[tiab] OR "dietary patterns"[tiab])</p> <p>AND</p> <p>("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])</p>	

Subsection: The menstrual cycle is responsive to exposures

Core term: External exposures	
Concept terms	MeSH terms
external exposures, environmental exposures, chemicals, chemical exposure, endocrine disruptor, exercise, lifestyle, physical activity, diet, nutrition, sleep, shift work, stress, light vitamin D	Life Style Environmental Exposure Environmental Pollutants Endocrine Disruptors
Search strategy	
<p>("Life Style"[Mesh:NoExp] OR "Environmental Exposure"[Mesh] OR "Environmental Pollutants"[Mesh] OR "Endocrine Disruptors"[Mesh] OR "lifestyle factors"[tiab] OR "environmental exposure"[tiab] OR "environmental pollutant"[tiab] OR "endocrine disruptor"[tiab])</p> <p>AND</p> <p>("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])</p>	

Subsection: Documenting the menstrual cycle as a vital sign

Core term: Documentation tools for menstrual cycle tracking	
Concept terms	MeSH terms
mobile application, app, mHealth, tracking app tracking application, tracking tool, chart, charting, electronic medical record, period tracker, menstrual tracker, smartphone, smart phone, iphone, mobile phone, cell phone, menstrual cycle tracker, calendar	mobile applications smartphone
Search strategy	
<p>("mobile applications"[Mesh] OR "smartphone"[Mesh] OR "mobile application"[tiab] OR "app"[tiab] OR "mHealth"[tiab] OR "tracking app"[tiab] OR "tracking application"[tiab] OR "tracking tool"[tiab] OR "chart"[tiab] OR "charting"[tiab] OR "period tracker"[tiab] OR "menstrual</p>	

tracker"[tiab] OR "smartphone"[tiab] OR "smart phone"[tiab] OR "mobile phone"[tiab] OR "cell phone"[tiab] OR "menstrual cycle tracker"[tiab])

AND

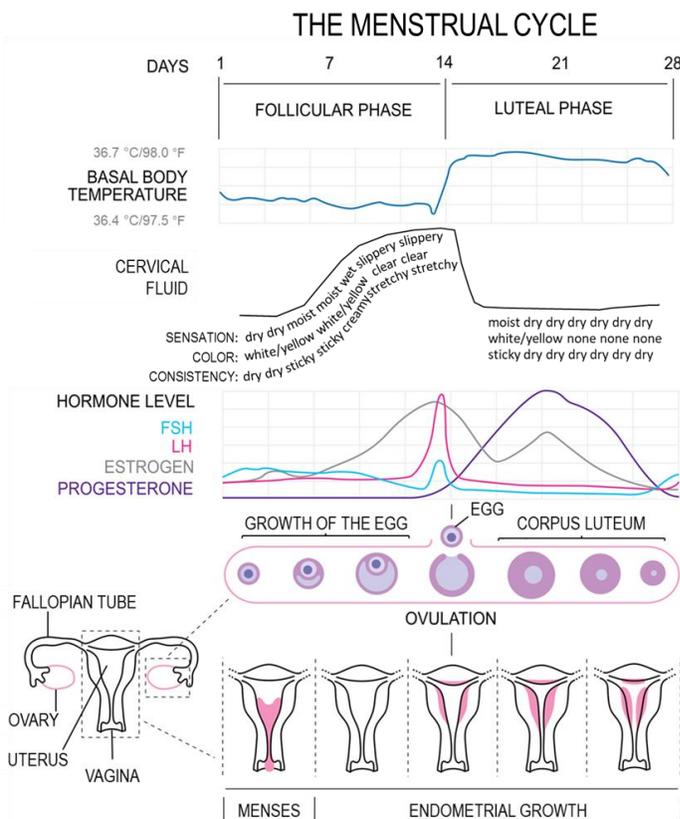
("menstrual cycle"[tiab] OR "menstrual period"[tiab] OR "menses"[tiab] OR "menstruation"[tiab] OR "ovarian cycle"[tiab] OR "endometrial cycle"[tiab] OR "uterine cycle"[tiab] OR "menstrual cycle length"[tiab] OR "menstrual bleeding"[tiab] OR "menstrual cycle characteristics"[tiab] OR "menstrual irregularity"[tiab] OR "menstrual cycle"[Mesh] OR "menstruation disturbances"[Mesh])

Supplementary Table S1. Clinical practice reference list: practice guidelines and clinical practice reviews cited in this paper and organized by subject

Subject	Reference
Abnormal uterine bleeding	<ul style="list-style-type: none"> • Munro MG, Critchley HOD, Fraser IS, Committee FMD. The two FIGO systems for normal and abnormal uterine bleeding symptoms and classification of causes of abnormal uterine bleeding in the reproductive years: 2018 revisions. <i>Int J Gynaecol Obstet</i>. 2018;143(3):393-408. • Singh S, Best C, Dunn S, Leyland N, Wolfman WL. No. 292-Abnormal Uterine Bleeding in Pre-Menopausal Women. <i>J Obstet Gynaecol Can</i>. 2018;40(5):e391-e415.
Bleeding disorders and heavy menstrual bleeding	<ul style="list-style-type: none"> • Borzutzky C, Jaffray J. Diagnosis and Management of Heavy Menstrual Bleeding and Bleeding Disorders in Adolescents. <i>JAMA Pediatr</i>. 2020;174(2):186-94. • Munro MG, Mast AE, Powers JM, Kouides PA, O'Brien SH, Richards T, et al. The relationship between heavy menstrual bleeding, iron deficiency, and iron deficiency anemia. <i>Am J Obstet Gynecol</i>. 2023. • urry N, Bowles L, Clark TJ, Lowe G, Mainwaring J, Mangles S, et al. Gynaecological management of women with inherited bleeding disorders. A UK Haemophilia Centres Doctors' Organisation Guideline. <i>Haemophilia</i>. 2022;28(6):917-37. • Adeyemi-Fowode O, Simms-Cendan J, Comm Adolescent Hlth C. Screening and Management of Bleeding Disorders in Adolescents With Heavy Menstrual Bleeding. <i>Obstet Gynecol</i>. 2019;134(3):E71-E83. • van Galen K, Lavin M, Skouw-Rasmussen N, Fischer K, Noone D, Pollard D, et al. European principles of care for women and girls with inherited bleeding disorders. <i>Haemophilia</i>. 2021;27(5):837-47 • Luiro K, Holopainen E. Heavy Menstrual Bleeding in Adolescent: Normal or a Sign of an Underlying Disease? <i>Semin Reprod Med</i>. 2022;40(01/02):23-31.
Diabetes	<ul style="list-style-type: none"> • Thong EP, Codner E, Laven JSE, Teede H. Diabetes: a metabolic and reproductive disorder in women. <i>Lancet Diabetes Endocrinol</i>. 2020;8(2):134-49.
Endocrine disrupting chemicals	<ul style="list-style-type: none"> • Giudice LC. Environmental impact on reproductive health and risk mitigating strategies. <i>Curr Opin Obstet Gynecol</i>. 2021;33(4):343-9.
Fertility awareness-based menstrual cycle tracking	<ul style="list-style-type: none"> • Duane M, Stanford JB, Porucznik CA, Vigil P. Fertility Awareness-Based Methods for Women's Health and Family Planning. <i>Front Med (Lausanne)</i>. 2022;9:858977. • Simmons RG, Jennings V. Fertility awareness-based methods of family planning. <i>Best Pract Res Clin Obstet Gynaecol</i>. 2020;66:68-82.
Hypothalamic amenorrhea	<ul style="list-style-type: none"> • Shufelt CL, Torbati T, Dutra E. Hypothalamic Amenorrhea and the Long-Term Health Consequences. <i>Semin Reprod Med</i>. 2017;35(3):256-62. • Indirli R, Lanzi V, Mantovani G, Arosio M, Ferrante E. Bone health in functional hypothalamic amenorrhea: What the endocrinologist needs to know. <i>Front Endocrinol (Lausanne)</i>. 2022;13:946695.
Menstrual cycle as a vital sign	<ul style="list-style-type: none"> • American Academy of Pediatrics. Menstruation in girls and adolescents: using the menstrual cycle as a vital sign. <i>Pediatrics</i>. 2006;118(5):2245-50.

Menstrual history-taking	<ul style="list-style-type: none"> • American College of Obstetricians and Gynecologists. ACOG Committee Opinion No. 651: Menstruation in Girls and Adolescents: Using the Menstrual Cycle as a Vital Sign. <i>Obstet Gynecol.</i> 2015;126(6):e143-e6. • Matteson KA, Munro MG, Fraser IS. The structured menstrual history: developing a tool to facilitate diagnosis and aid in symptom management. <i>Semin Reprod Med.</i> 2011;29(5):423-35.
Migraines	<ul style="list-style-type: none"> • Cupini LM, Corbelli I, Sarchelli P. Menstrual migraine: what it is and does it matter? <i>J Neurol.</i> 2021;268(7):2355-63.
Neurological conditions	<ul style="list-style-type: none"> • Roeder HJ, Leira EC. Effects of the Menstrual Cycle on Neurological Disorders. <i>Curr Neurol Neurosci Rep.</i> 2021;21(7):34. • Maguire MJ, Nevitt SJ. Treatments for seizures in catamenial (menstrual-related) epilepsy. <i>Cochrane Database Syst Rev.</i> 2021;9(9):Cd013225.
Nutrition	<ul style="list-style-type: none"> • Holtzman B, Ackerman KE. Recommendations and Nutritional Considerations for Female Athletes: Health and Performance. <i>Sports Med.</i> 2021;51(Suppl 1):43-57. • Sims ST, Kerksick CM, Smith-Ryan AE, Janse de Jonge XAK, Hirsch KR, Arent SM, et al. International society of sports nutrition position stand: nutritional concerns of the female athlete. <i>J Int Soc Sports Nutr.</i> 2023;20(1):2204066.
Ovulatory dysfunction	<ul style="list-style-type: none"> • Munro MG, Balen AH, Cho S, Critchley HOD, Diaz I, Ferriani R, et al. The FIGO ovulatory disorders classification system. <i>Int J Gynaecol Obstet.</i> 2022;159(1):1-20. • Stuenkel CA, Gompel A. Primary Ovarian Insufficiency. <i>N Engl J Med.</i> 2023;388(2):154-63. • American College of Obstetricians and Gynecologists. Practice Bulletin No. 136: Management of abnormal uterine bleeding associated with ovulatory dysfunction. <i>Obstet Gynecol.</i> 2013;122:176-85.
Polycystic ovarian syndrome (PCOS)	<ul style="list-style-type: none"> • Walker K, Decherney AH, Saunders R. Menstrual Dysfunction in PCOS. <i>Clinical Obstetrics and Gynecology.</i> 2021;64(1):119-25. • Teede HJ, Tay CT, Laven JJE, Dokras A, Moran LJ, Piltonen TT, et al. Recommendations from the 2023 international evidence-based guideline for the assessment and management of polycystic ovary syndrome. <i>Eur J Endocrinol.</i> 2023;189(2):G43-G64. • Royal College of Obstetricians and Gynaecologists. Long-term Consequences of Polycystic Ovary Syndrome: Green-top Guideline No. 33. 2014.
Sexually transmitted infections	<ul style="list-style-type: none"> • Shroff S. Infectious Vaginitis, Cervicitis, and Pelvic Inflammatory Disease. <i>Med Clin North Am.</i> 2023;107(2):299-315. • Curry A, Williams T, Penny ML. Pelvic Inflammatory Disease: Diagnosis, Management, and Prevention. <i>American Family Physician.</i> 2019;100(6):357-64.
Structural anomalies of the reproductive tract	<ul style="list-style-type: none"> • American College of Obstetricians and Gynecologists. Committee Opinion No. 779: Management of Acute Obstructive Uterovaginal Anomalies. <i>Obstet Gynecol.</i> 2019;133:e363-71. • Dietrich JE, Millar DM, Quint EH. Obstructive reproductive tract anomalies. <i>J Pediatr Adolesc Gynecol.</i> 2014;27(6):396-402.

How to track your menstrual cycle



Know it: What is the menstrual cycle?

During a menstrual cycle, the ovaries and the uterus work together to prepare for pregnancy. If pregnancy doesn't happen, your body releases endometrial tissue, or the inner lining of the uterus, resulting in a **menstrual period**. One **menstrual cycle** is the time from the start of one menstrual period to the start of the next period. A menstrual cycle typically lasts anywhere from 23 to 35 days. Menstrual bleeding typically lasts 3 to 7 days.

The **follicular phase** is the first part of the menstrual cycle, lasting from the start of your period until ovulation. During the follicular phase, levels of follicle stimulating hormone (FSH), luteinizing hormone (LH) and estrogen gradually increase in your body, causing the growth and development of eggs in your ovaries, and the growth of the inner lining of your uterus. Eventually, hormone levels are high enough to

trigger **ovulation**, when an egg or ovum is released from an ovary and travels into the fallopian tubes to the uterus. The egg lives about 24 hours. During the follicular phase, your body also gradually makes more **cervical fluid**. Generally, cervical fluid changes in sensation (from dry, to moist, to wet, to slippery), color (from white/yellow to clear), and consistency (from sticky, to creamy, to stretchy). Around ovulation, the most cervical fluid is produced, and it tends to be clear, slippery, and stretchy, a bit like egg whites.

The **luteal phase** is the second part of the menstrual cycle, lasting from ovulation until the start of your next period. After ovulation, cervical fluid disappears and feels dry until your period starts. During the luteal phase, progesterone hormone levels increase. Cells in the ovary that released the egg, called the **corpus luteum**, produce the progesterone and estrogen. When these cells die after about 12 to 16 days, they stop producing hormones, and progesterone and estrogen levels fall. This triggers your period, and the start of your next menstrual cycle.

Track it: How do you track the menstrual cycle?

You can see, feel, and measure signs that reflect the changes happening in your body during your menstrual cycle. Commonly tracked signs include vaginal bleeding, basal body temperature, and cervical fluid. If you decide to track your menstrual cycle, at minimum, keep track of your bleeding pattern. You can track other signs and symptoms depending on your reasons for tracking, such as knowing whether you ovulated, or to understand flare-ups of other health conditions. **If you are using hormonal contraception, these signs will not have the patterns described below.**

Vaginal bleeding: Write down any day you have menstrual bleeding, and any other time during your menstrual cycle when you see blood at your vagina. Note if it is bleeding (red blood) or spotting (light brown or pink).

Waking or basal body temperature (BBT): BBT is your body's temperature at rest. Measure your BBT with a thermometer under your tongue when you wake up at about the same time every day, before you get out of bed. Write down your temperature on your chart. Your BBT is about 0.5 °F (0.3 °C) lower in the follicular than the luteal phase. BBT rises after ovulation, stays higher during the luteal phase, and decreases about 1 to 2 days before your period begins. Looking back at your BBT pattern can help you figure out whether you ovulated. BBT can be affected by illness and travel/changing time zones. Temperature can also be tracked by wearable devices; check your user guide or device information.

Cervical fluid: From the start of your menstrual cycle through ovulation, your body gradually makes more cervical fluid. Around ovulation, your body produces the most cervical fluid, and it tends to be clear, slippery, and stretchy, a bit like egg whites. After ovulation, it disappears and feels dry until your period starts. Once your period is finished, you can start observing it on toilet paper when you wipe, and by using a finger to touch any cervical fluid on the toilet paper. To track your cervical fluid, write down 1) its sensation, or how it feels in your vagina (dry, moist, wet, slippery), 2) its color (white/yellow, clear), and 3) its consistency (sticky, creamy, stretchy). Knowing your own cervical fluid pattern can help you identify vaginal infections. Abnormal vaginal discharge, unpleasant odor, itching, stinging, and redness are not part of healthy cervical fluid patterns and should be checked by your healthcare provider.

Other information: You can also track symptoms (mood changes, stress, pain, cramps, headaches, digestive issues, flare-ups of other health conditions), activities (sex, travel, exercise), and other information (diet, medications) across your menstrual cycle. Some common health conditions like headaches, irritable bowel syndrome, and depression can get worse just before and during your period. Some people experience other changes in their body during their menstrual cycle, like spotting or light cramping during ovulation, breast tenderness before your period, and changes in energy and appetite. Tracking other information about your health and activities can help you understand how your menstrual cycle is connected to your broader health and wellness.

How many cycles to track: While tracking one cycle is helpful, tracking for 3 to 6 cycles (or longer) will help you better understand your own patterns, and give more useful information to your healthcare provider if you choose to share it.

Use it: What can you do with a record of your menstrual cycle?

By keeping a record of your menstrual cycle, you can:

- Learn what's normal for you and know when to expect your period.
- Plan ahead for managing symptoms that may come up during your menstrual cycle, like headaches, cramps, or flare-ups of other health conditions.
- Help your healthcare provider better address your health concerns and problems related to your menstrual cycle.
- When used with additional information and rules from fertility awareness methods, your record can help you learn about your fertility. **The information on this handout is not enough to prevent pregnancy!**

