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Evaluation and Management of Menstrual Disorders in Teens (and children)

Session Code: S2210

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Faculty Disclosure Information

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Learning Objectives

At the conclusion of the presentation, participants should be able to:

1. Appreciate the importance of obtaining a thorough menstrual history
2. Initiate the diagnostic evaluation for menstrual disorders
3. Identify the likely etiology of abnormal uterine bleeding (AUB) and begin the appropriate intervention

Throughout history, menses have been regarded as taboo

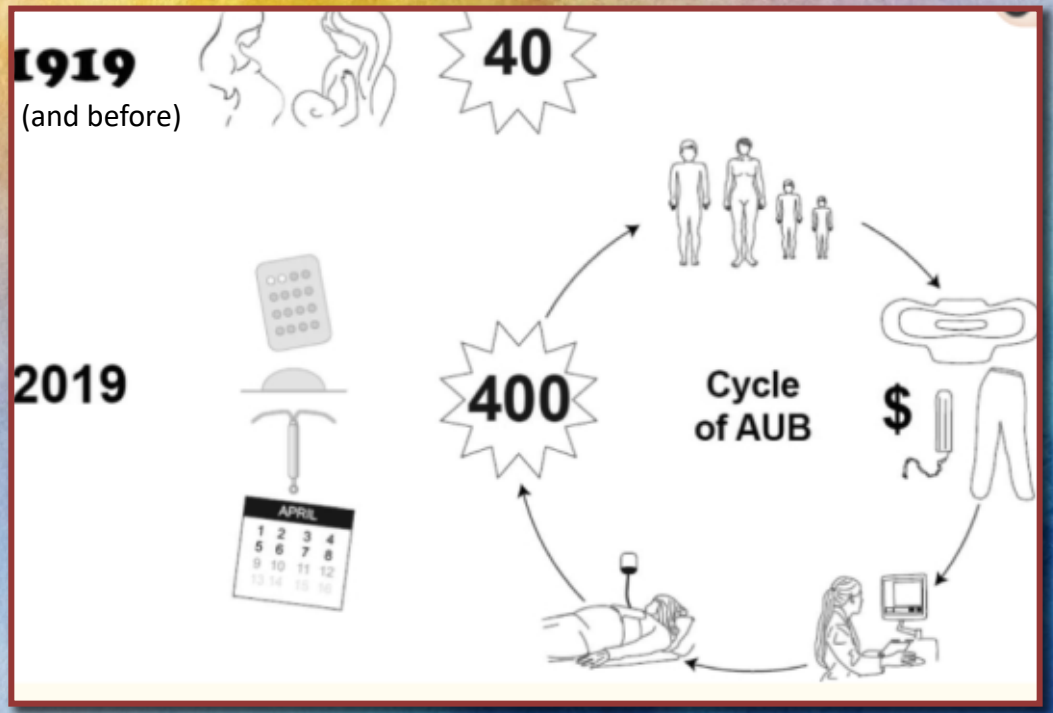
Women may be considered to be “unclean” during menstruation and are isolated from others in some cultures/societies

Ethiopian girl: “I Didn't Tell Anyone Because I Was Very Afraid”

Even regular normal menses can lead to school and work absenteeism

Alharbi KK, et al. J Family Med Prim Care. 2018; 7: 1197
Smiles D, et al. Women’s Reproductive Health 2017; 4:185

- From paleolithic times to the early 20th century, "women experienced menstruation approximately 40 times in their lifetime, owing to pregnancy and lactational amenorrhea.
- Women may now expect to have more than 400 episodes of menstruation, mainly as a result of fertility management.
- Therefore, AUB is increasingly common."



Critchley HOD. Menstruation: science and society. Am J Obstet Gynecol 2020; 223:624)

What is menstruation?

Menstruation is a physiological process of recurring and self-limited inflammation.

The menstruating endometrium undergoes cyclic injury resulting in a wounded surface that must rapidly repair/heal every month for ~40+ years.

Critchley HOD, Maybin JA, Armstrong GM, Williams ARW. Physiology of the Endometrium and Regulation of Menstruation. Physiol Rev. 2020 Jul 1;100(3):1149-1179.

Onset of menses and regular menstrual cyclicity indicate appropriate hypothalamic-pituitary-gonadal (HPG) axis function

Abnormal uterine bleeding can be considered as menses too early, menses too late, infrequent menses, absence of menses, and heavy menses

Many adolescent patients seek care for irregular menses, absent menses, or heavy menstrual bleeding, BUT many are too scared or embarrassed to seek care

Definitions, Endocrinology, and Terminology

Tanner Staging

Breast Development

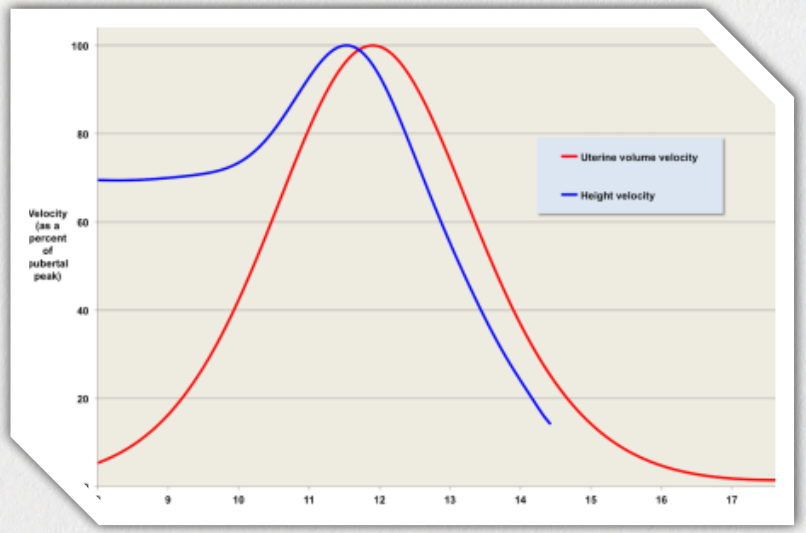
1-Prepubertal
2-Budding with larger areolae
3-Enlargement of breast and areolae
4-Secondary mound of areolae
5-Mature contour

Pubic Hair Development

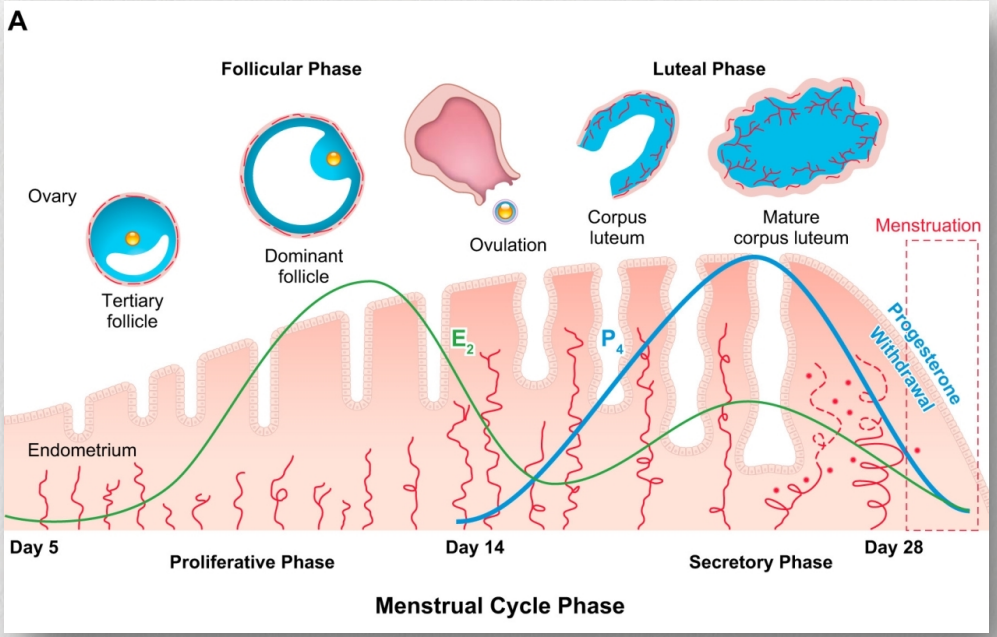
1-Prepubertal
2-Small amount of coarse pigmented hair mostly along labia majora
3-Spread of coarse hair over mons pubis
4-Almost adult pattern
5-Adult pattern

Uterine Development

- At age 3 years, predicted uterine volume is 1.5 cm^3. Volume increases with puberty to 5-8 cm^3. Post-pubertal volume is approximately 25.8 cm^3.*
- The ratio of the corpus to the cervix is approximately 1:1 prior to puberty. This ratio changes to between 2:1 and 3:1 after puberty
- Variability between individuals
- Transabdominal ultrasound and MRI can be used to ascertain uterine status and anomalies



*Kelsey TW, et al. PLoS One. 2016 Jun 13;11(6):e0157375. PMID: 27295032

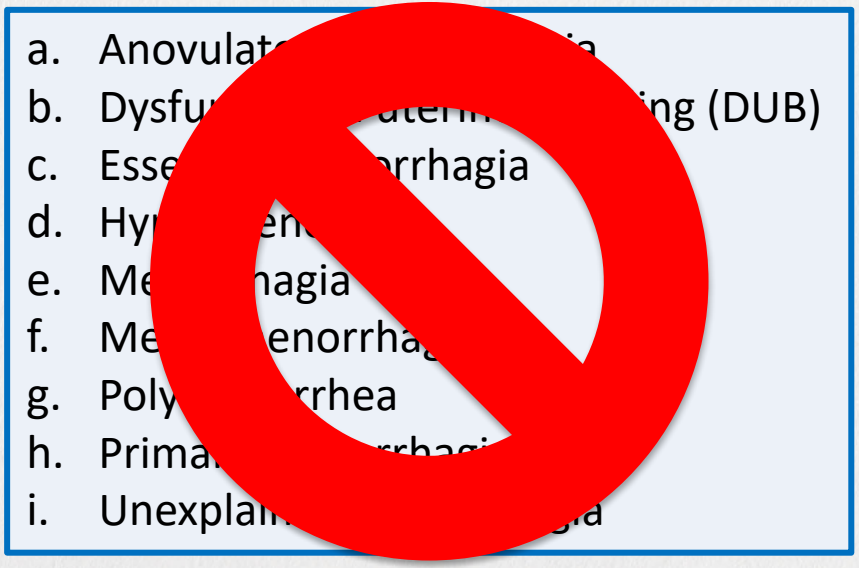


Three phases of the menstrual cycle:

- Proliferative
- Secretory
- Menstrual

Demise of the corpus luteum leads to decreased progesterone levels which affects the upper functional layer of the endometrium culminating in menses

What terminology should I use to describe this patient?



Answer: None of the above
The correct term is AUB

Chodankar RR, et al. Front Reprod Health. 2022 Feb 28;4:820029. doi: 10.3389/frph.2022.820029. PMID: 36303670

Federation of Gynecology and Obstetrics (FIGO) System I for AUB

Parameter	Normal	Abnormal
Frequency	≥ 24 days and ≤ 38 days	Absent > 38 days < 24 days
Duration	< 8 days	> 8 days
Regularity	Normal	Irregular
Flow volume	Normal	Light or heavy
Intermenstrual bleeding	None	Random Cyclic/Predictable

Chodankar RR, et al. PMID: 36303670

What is normal for adolescents and young women?

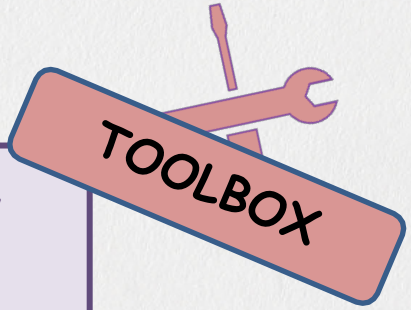
- Age at menarche (median): 12.43 years
- Menstrual flow length: ≤ 7 days
- Menstrual product use: 3-6 pads/tampons per day
- Menstrual cycle interval:
  - Irregular during the first gynecologic year
  - 21-45 days during the second gynecologic year
  - 21-35 days from third gynecologic year to menopause

What is abnormal?

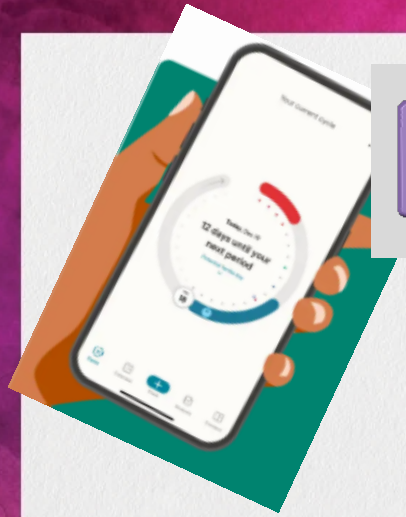
- Vaginal bleeding prior to 10 years of age
- No signs of puberty by age 13 years
- No menses within 3 years of onset of breast development
- No menses by age 14 years with signs of hyperandrogenism
- No menses by age 14 years with history of eating disorder and/or excessive exercise
- No menses by age 15 with appropriate pubertal development
- Initially regular menses that have become irregular
- Menses that are 90 days apart
- Menses lasting > 8 days
- Menses requiring pad/tampon changes every 1-2 hours and through the night

- Abnormal uterine bleeding
  - ✓ Premature bleeding (prepubertal)
  - ✓ Delayed onset/absence of menarche
  - ✓ Secondary amenorrhea
  - ✓ Heavy menstrual bleeding
- Menses and special populations

What's in our toolbox?



- ✓ Bloodwork, e.g. hormone concentrations, CBC, ferritin, iron
- ✓ Combined oral contraceptives (COC)
- ✓ Transdermal patch and oral progestin
- ✓ Vaginal ring
- ✓ Progesterone "mini-pill"
- ✓ Oral norethindrone acetate or medroxyprogesterone acetate
- ✓ Depot medroxyprogesterone acetate
- ✓ Etronogestrel subdermal implant
- ✓ Progestin containing IUD
- ✓ GnRHa superagonists
- ✓ Iron treatment and transfusion
- ✓ FemTech



FemTech

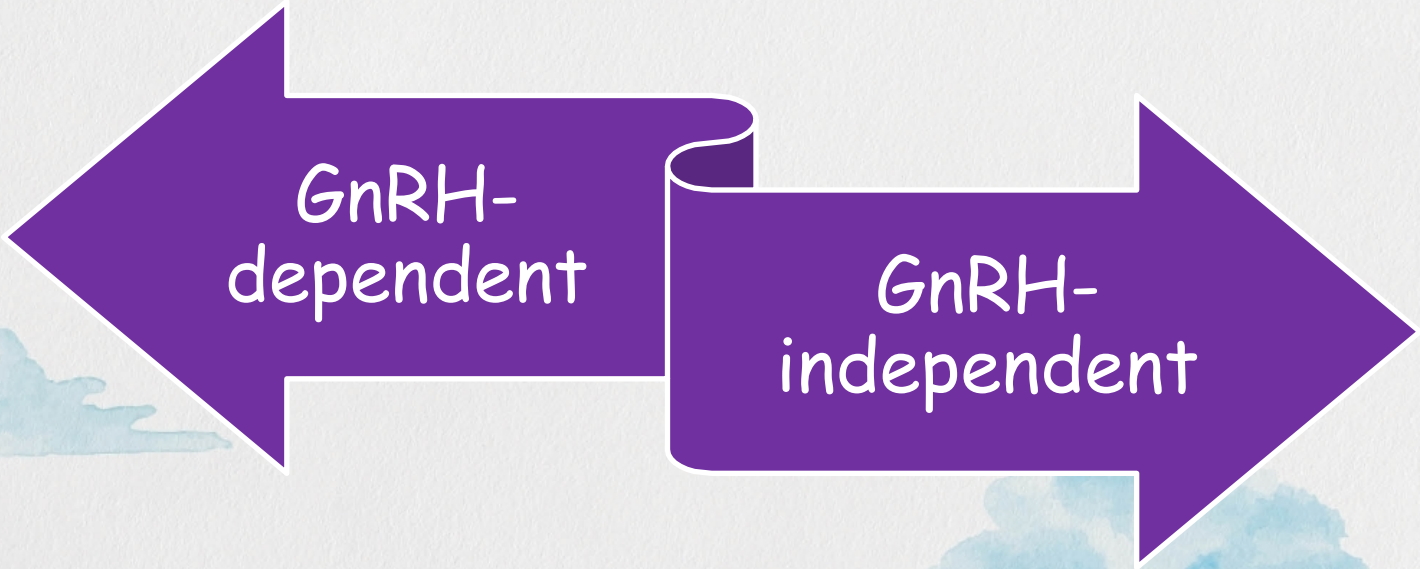
New Wearables
- Menstrual cups
- Reusable underwear

Sensors for fertility tracking

Mobile menstrual tracking apps

Liberty A, et al. Menstrual Technology Innovations and the Implications for Heavy Menstrual Bleeding. Obstet Gynecol. 2023 ;141(4):666-673. PMID: 36791417

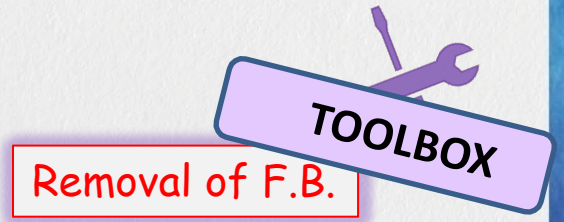
Premature Uterine Bleeding



Premature Uterine Bleeding

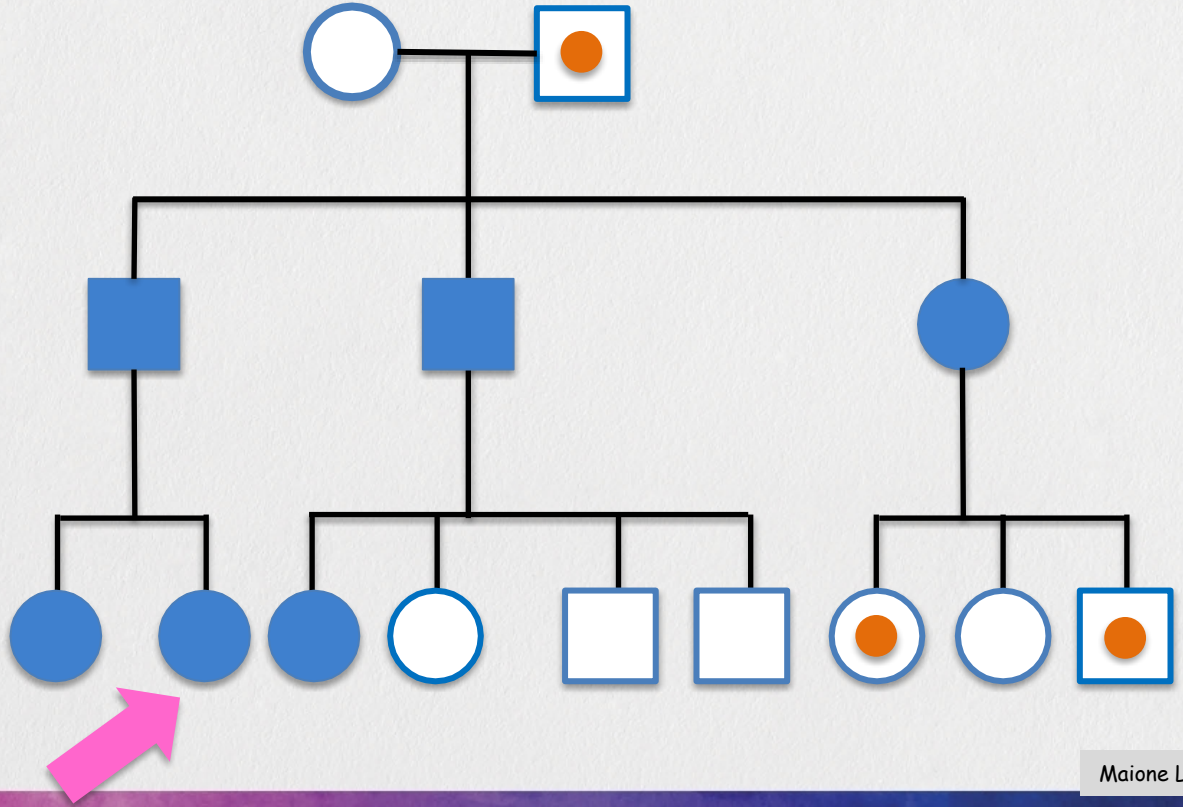
- Isolated vaginal bleeding prior to 10 years of age
- No other sign of puberty
- Prepubertal gonadotropin concentrations
- Diagnosis of exclusion

Sexual abuse/infection
Vaginal foreign body
Ovarian cyst
Hypothyroidism
Pinworm endometritis



Ejaz S, et al. Horm Res Paediatr. 2015;84(4):217
Nella AA, et al. J Pediatr Endocrinol Metab. 2014;27(9-10):821
Nayak S, et al, J Pediatr Adolesc Gynecol. 2014;27(6):e127

6 year old girl with breast development. Her older sister experienced menarche at age 8 years. Her first cousin experienced menarche at age 7 years.



TOOLBOX

GnRH agonist

MKRN3
M268Vfs*

+ Variant
+ CPP

+ Variant
- CPP

- Variant
- CPP

Maione L, et al. Clin Endocrinol (Oxf). 2021 Apr 2.

GnRH-dependent precocious puberty

GnRH-dependent

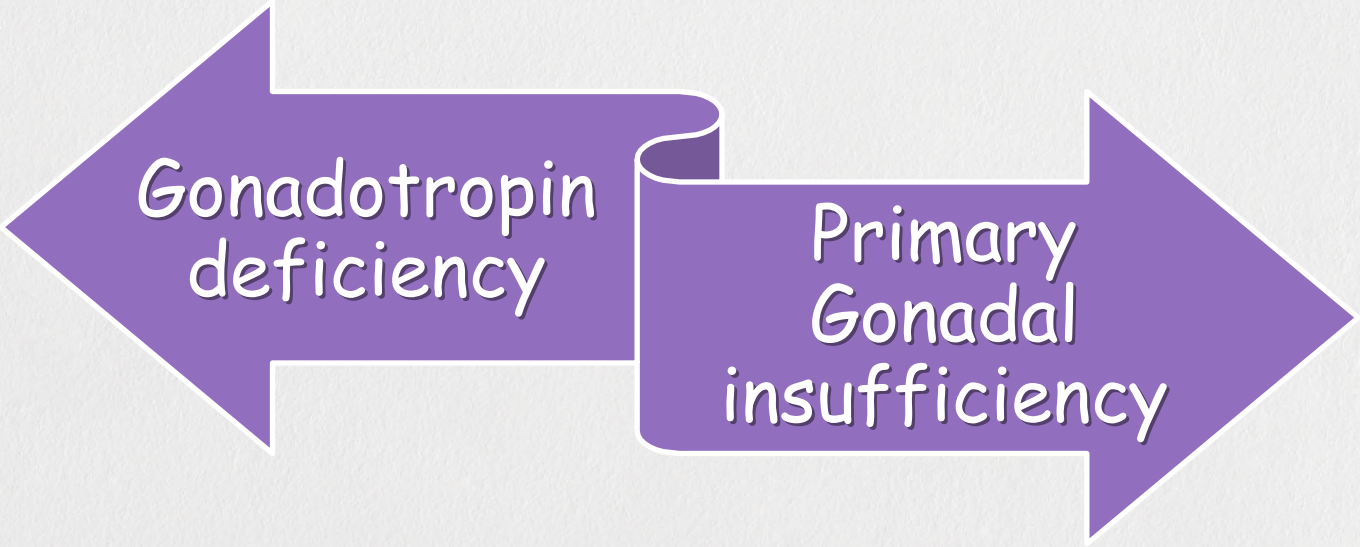
- Without CNS anomalies
  - ✓ Idiopathic
  - ✓ Genetic
    - ✓ MKRN3 variant
    - ✓ DLK1 variant
    - ✓ KISS1R activating variant
    - ✓ KISS1 activating variant
  - ✓ Secondary to chronic exposure to sex steroids, e.g. CAH
- CNS anomalies
  - ✓ Tumors, e.g. optic glioma with NF1
  - ✓ Congenital malformations, e.g., hypothalamic hamartoma
  - ✓ Acquired disease, e.g. infection, irradiation

GnRH-independent precocious puberty

- Sex steroid secreting tumors, e.g., juvenile granulosa cell
- Autonomous ovarian cysts
- Chronic untreated primary hypothyroidism
- McCune-Albright Syndrome
- Prader-Willi Syndrome
- Williams and Temple Syndrome
- Excessive aromatase activity, e.g. aberrant transcriptional regulation
- Exogenous exposures, e.g. lavender tea tree oil

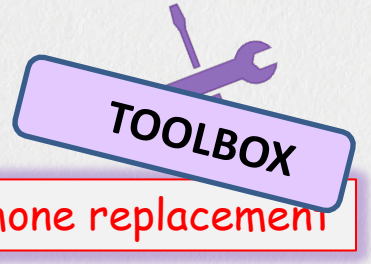
Delayed Vaginal Bleeding

Minimal breast development
and delayed menses



Turner Syndrome

- 1:2500 live births (includes mosaics)
- Short stature
- Infertility due to premature ovarian insufficiency (POI)
- Lymphedema in utero (webbed neck, puffy feet at birth)
- Cardiac abnormalities, primarily coarctation of the aorta and bicuspid aortic valve
- Abnormalities can include cubitus valgus, shortened fourth metacarpals, short neck, high arched palate, neurosensory hearing loss, scoliosis, and Madelung deformity.
- Renal abnormalities, e.g. horseshoe kidney
- Typically normal intelligence, but may have deficits in visuospatial processing, etc.
- Autoimmune disease (e.g. hypothyroidism, T1D, celiac disease)
- Spontaneous pubertal development is more common in girls with mosaic karyotype



Hypergonadotropic Hypogonadism

- Turner syndrome
- Pure gonadal dysgenesis (46,XY)
- Mixed gonadal dysgenesis (45,X/46XY)
- Radiation/chemotherapy
- Trauma
- Galactosemia
- Autoimmune ovarian insufficiency
- Non-immune ovarian insufficiency, e.g. *FOXL2* variants
- LH receptor variant
- FSH receptor variant
- Defect in estradiol biosynthesis
- Fragile X pre-mutation

Hypogonadotropic hypogonadism

Congenital hypogonadotropic hypogonadism

- ✓ Not typically associated with atypical or ambiguous genitalia
- ✓ Usually associated with delayed puberty, absent menses and infertility
- ✓ May be associated with anosmia
- ✓ May be associated with genetic variants. Inheritance patterns include autosomal dominant, autosomal recessive, X-linked, and oligogenic.
- ✓ May be associated with additional anterior pituitary hormone deficiencies

Craniopharyngioma, other CNS tumors, CNS injury, or pituitary disease

Functional associated with restrictive eating or systemic disorders

Constitutional delay of growth/development (self-limited)

Absent Menses

Breast development
and no menses

Difference in
Sex Development

Anatomic
Etiology

Absent menses

This 15 year old girl experienced onset of breast development at 12 years of age. She is tall for her family. She uses a deodorant, but doesn't really need to wear it. She has no pubic or axillary hair. She presents to her PCP with primary amenorrhea. She has a history of an inguinal hernia repaired at 9 months of age. Family history reveals that mom has two maternal great aunts with infertility.

Pertinent findings on her physical exam include Tanner 5 breast development, no sexual hair, normal female external genitalia, and no palpable labial masses.

Laboratory data showed total testosterone 525 ng/dl, estradiol 60 pg/ml, LH 23.5 mIU/ml, and FSH 8.7 mIU/ml.

Androgen Insensitivity

Typically presents with breast development and primary amenorrhea.

Complete form presents with female external genitalia and labial masses. Normal AMH secretion leads to regression of Mullerian duct derivatives.

Phenotypic spectrum ranges from complete to partial forms.

X-linked recessive disorder due to inactivating variants in the androgen receptor gene located at Xq11-q12.

Absent menses

Normal breast and pubic hair development
Normal HPG axis function
Primary amenorrhea
Acute or cyclic abdominal pain
No bleeding following a 10-day progesterone challenge

Anatomic Anomalies
Imperforate hymen
Distal vaginal agenesis
Transverse vaginal septum
Mullerian agenesis (MRKH)

Mayer-Rokitansky-Küster-Hauser

- Congenital anomaly characterized by agenesis/aplasia of the uterus and upper part of the vagina
- Estimated prevalence of 1 in 5000 live female births
- Normal female external genitalia
- Normal female karyotype (46,XX)
- Normal ovarian development and function
- Approximately 30% have renal anomaly (typically unilateral renal agenesis)
- Type 1 is isolated Mullerian agenesis
- Type 2 is Mullerian agenesis associated with renal, skeletal, cardiac anomalies, and hearing loss

Herlin MK. Front Endocrinol (Lausanne). 2024 Apr 18;15:1368990. doi: 10.3389/fendo.2024.1368990. PMID: 38699388

Secondary Amenorrhea

- Pregnancy
- Polycystic ovary syndrome
- Nonclassic congenital adrenal hyperplasia
- Hypo/Hyper-thyroidism
- Hyperprolactinemia
- Premature ovarian insufficiency (POI)
- Cushing's syndrome
- Diabetes mellitus
- Restrictive eating disorders
- Juvenile hemochromatosis
- Traumatic brain injury
- Chronic illnesses and/or stress

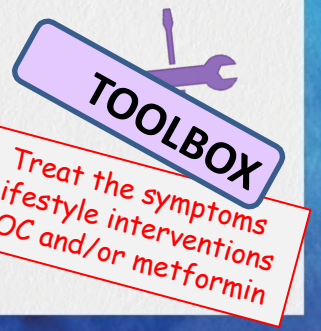
Rotterdam consensus is now firmly grounded as the best evidence for **adult** women, but diagnostic criteria for adolescent girls differ.

Updated 2023 Evidence-Based Guidelines for PCOS in Adolescent Girls after 2nd gynecologic year:

1. Oligo- or anovulation;
2. Clinical and/or biochemical hyperandrogenism;
3. ***AND*** **exclusion of other etiologies**

Patients cannot be accurately evaluated for PCOS or NC-CAH if currently taking COCs

Ovarian imaging should be avoided due to presence of multi-cystic ovaries



Teede HJ, et al. Recommendations from the 2023 International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome. Hum Reprod. 2023;38(9):1655-1679. PMID: 37580037

The conundrum of diagnosing PCOS in the adolescent girl

Overdiagnosis of PCOS "labeling"

Missed opportunity to diagnose and intervene

LOST TO FOLLOW-UP

- Irregular menses
- Hyperandrogenism
  - Clinical features
  - Androgen concentrations
- Exclude other disorders

Insulin resistance, hyperinsulinemia, and obesity cannot be used as diagnostic criteria for PCOS in adolescents or adult women.

Teede HJ, et al. Recommendations from the 2023 International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome. Hum Reprod. 2023;38(9):1655-1679. PMID: 37580037

Nonclassic or late onset congenital adrenal hyperplasia (CAH)

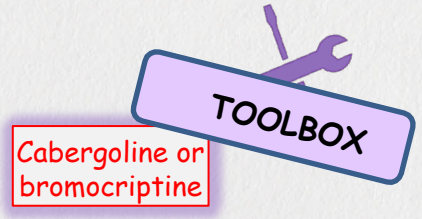
- ✓ History of premature pubarche
- ✓ Tall stature
- ✓ Advanced skeletal maturation
- ✓ Hirsutism
- ✓ Amenorrhea
- ✓ +/- Clitoromegaly
- ✓ Severe acne
- ✓ The estimated prevalence of nonclassic CAH in American Caucasians was 1 in 200*
- ✓ Random 17-OHP ≥ 1000 ng/dl is diagnostic
- ✓ Morning 17-OHP ≥ 200 ng/dl warrants evaluation

* Hannah-Shmouni F, et al. Genet Med 2017;19:1276

17 year old previously healthy girl presented for evaluation of headaches, secondary amenorrhea, and galactorrhea. No regular medications. Family history was unremarkable. Her exam showed normal pubertal development and bilateral galactorrhea. Laboratory studies showed normal thyroid function studies. Her fasting morning prolactin was 968 ng/ml. Her visual fields were intact.

Her MRI showed an enlarged pituitary gland with microadenoma

Diagnosis: Hyperprolactinemia



Heavy Menstrual Bleeding

Heavy menstrual bleeding is characterized by:

- Menses lasting longer than 7 days
- Blood loss exceeding 80 ml per menses
- Changing pad/tampon every 1-2 hours
- Passing clots larger than 1 inch diameter
- Using double protection during sleep.

Heavy menstrual bleeding is excessive menstrual bleeding that interferes with a woman's physical, emotional, or social quality of life.

Heavy menstrual bleeding can be acute or chronic

Approximately 40% of adolescent girls have experienced HMB. Consequences include:

- Increased school absences
- Decreased school performance
- Less involvement in school activities
- Approximately 20% have bleeding disorder
- Approximately 5% end up in ICUs
- Iron deficiency with/without anemia

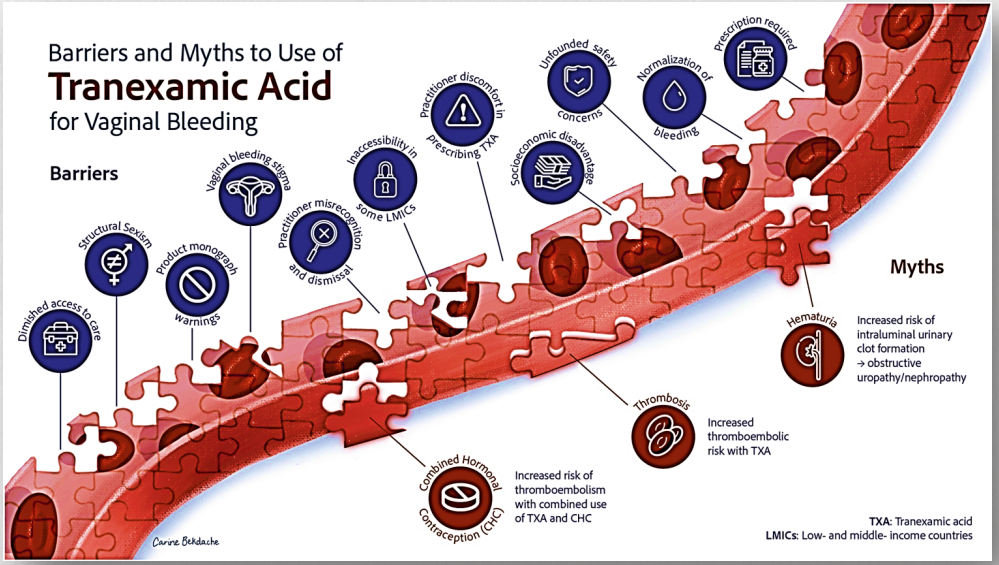
Munro MG, et al., Am J Obstet Gynecol. 2012;207:259

Acute treatments for heavy menstrual bleeding

- Conjugated estrogen 25 mg, iv, every 4-6 hours
- Monophasic COC with 30-50 mcg ethinyl estradiol, po, every 6-8 hours until bleeding ceases
- Medroxyprogesterone acetate 10-20 mg tid for 7 days
- Norethindrone acetate 5-10 mg qid
- Tranexamic acid 10 mg/kg IV tid for 5 days (max 30 gm/day)
- Epsilon aminocaproic acid 5 grams orally during the first hour, followed by 1-1.25 grams hourly up to 8 hours (max 30 gm/day)
- Transfusion

- COCs
- Progesterone only pills
- Combined patches
- Levonorgestrel IUDs
- Progesterone injections
- Etonogestrel implant
- Combined vaginal rings
- Tranexamic acid
- Epsilon aminocaproic acid (EACA)
- Iron for associated anemia

Maintenance therapy for heavy menstrual bleeding



Tranexamic acid is an oral antifibrinolytic synthetic lysine analog. It competitively inhibits the binding of fibrin to plasminogen and prevents activation of plasminogen to plasmin. It inhibits fibrinolysis and does not cause active coagulation.

EACA is a competitive inhibitor that prevents plasminogen from binding to fibrin. By preventing conversion of plasminogen to plasmin, fibrinolysis is inhibited.

VanderMeulen H, et al. Res Pract Thromb Haemost. 2024;8(3):102389. PMID: 38623473

Causes of Abnormal Uterine Bleeding

- Immature HPG axis with anovulatory bleeding
- PCOS
- Thyroid disease
- Miscarriage, ectopic pregnancy
- Infection
- Adenomyosis, polyp, leiomyoma, malignancy
- Foreign body
- Hemorrhagic ovarian cysts
- Bleeding disorders
- Capillary fragility in collagen disorders
- Medications, e.g. anticoagulants

O'Brien SH. Hematology Am Soc Hematol Educ Program. 2018;(1):390-398

ORIGINAL ARTICLE

“They don’t really take my bleeds seriously”: Barriers to care for women with inherited bleeding disorders

Arya S, et al. "They don't really take my bleeds seriously": Barriers to care for women with inherited bleeding disorders. J Thromb Haemost. 2021;19(6):1506-1514. PMID: 33774912.

Signs and symptoms of possible bleeding disorder

- HMB since menarche
- Family history of bleeding disorder
- Personal history of at least one of the following:
  - ✓ History of epistaxis, bruising,
  - ✓ Prolonged bleeding from trivial cuts,
  - ✓ Bleeding from mouth/GI tract without obvious cause
  - ✓ Prolonged bleeding after dental extraction
  - ✓ Hemorrhage that required blood transfusion

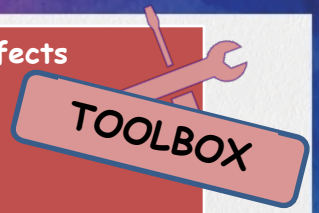
Bleeding disorders

- von Willebrand disease
- Platelet function defect
- Hemophilia carrier (mild hemophilia)
- Clotting factor deficiency
- Fibrinolytic disorder
- Immune thrombocytopenia purpura
- Increased capillary fragility

- Sexism in bleeding disorders – "only men have bleeding disorders"
- Combination therapies may be needed to control menstrual bleeding

Weyand AC, James PD. Sexism in the management of bleeding disorders. Res Pract Thromb Haemost. 2020;5(1):51-54. PMID: 33537529

Agent	Amenorrhea (%)	Bone mineral Density	Other side effects
COC (continuous)	70%	Mild ↓	Risk for VTE
Combined transdermal patch	Insufficient data	Limited data shows no effect	Risk for VTE
Progesterone mini-pill	<10%	Insufficient data	Minimal to no risk for VTE
Norethindrone acetate/MPA	~76% after 2 yrs	Insufficient data	Minimal to no risk for VTE
Depot MPA	~50% by 1 yr	Significant ↓	Minimal to no risk for VTE
Etonogestrel implant	Up to 22%	Insufficient data	Minimal to no risk for VTE
Progesterone-containing IUDs	~20% by 1 yr	Appears neutral	Minimal to no risk for VTE
Tranexamic acid	No effect	Insufficient data	Insufficient data
DDAVP for vWD	No effect	Insufficient data	Insufficient data



Menses and Special Populations

Need for anticipatory guidance especially because parents and girls are anxious about onset of menses

Prevention of sexual abuse may be a major parental concern especially for more vulnerable girls

Dependence on others for daily activities – how to perform menstrual hygiene?

Depending on developmental level, education regarding sexuality, menses, STI, and pregnancy is necessary

Teach "No-Go-Tell" which is say "no", move from the situation, and tell a trusted person

Quint EH. Adolescents with Special Needs: Clinical Challenges in Reproductive Health Care. J Pediatr Adolesc Gynecol. 2016;29(1):2-6. PMID: 26542013.

Menses and Special Populations

Discuss managing menses while acknowledging that achieving complete amenorrhea is difficult

Discuss potential concerns for medications affecting onset/frequency of seizures.

Risk of venous thromboembolism with estrogen in mobility impaired adolescents

Consider placement of levonorgestrel IUD. Might require anesthesia for placement

Consider bone density, vitamin D status, and weight

As with other teens, confidential interviews need to be considered

Quint EH. Adolescents with Special Needs: Clinical Challenges in Reproductive Health Care. J Pediatr Adolesc Gynecol. 2016;29(1):2-6. PMID: 26542013.

Menstrual Health

Menstrual health (MH) may be negatively affected by inequities such as disparities in access to healthcare, education, products, services and facilities for menstrual management.

Women may experience stigma and discrimination with limitations on participation in school, sports, and work.

These issues affect women in low- and middle-income countries **and** are also found in the USA.

These inequities and disparities lead to negative effects on wellbeing and QoL.

As one girl offered: “Some people say witches can harm you if they come across (your) menstrual blood.... if you have prolonged periods or other complications ... they can make you sterile.”*

I have heard from nearly everyone; teacher, mother, aunt and grandmother, that during my period, I should not eat cold foods, foods that produce gas, pickles, yogurt and milk because they cause stomach-ache. But I have not experienced it because I have not eaten them.....Well (smiling), if my mother sees me eat these things during my period, she will quarrel with me" **

* Mutunda Lahme A, Stern R. Factors that affect menstrual hygiene among adolescent schoolgirls: A case study from Mongu District, Zambia. Women's Reproductive Health. 2017 Sep 2;4(3):198-211.
** Morowatisharifabad MA, et al. Cultural beliefs on menstrual health in Bam city: a qualitative study. International Journal of Pediatrics. 2018 ;6:8765-78.

Period poverty

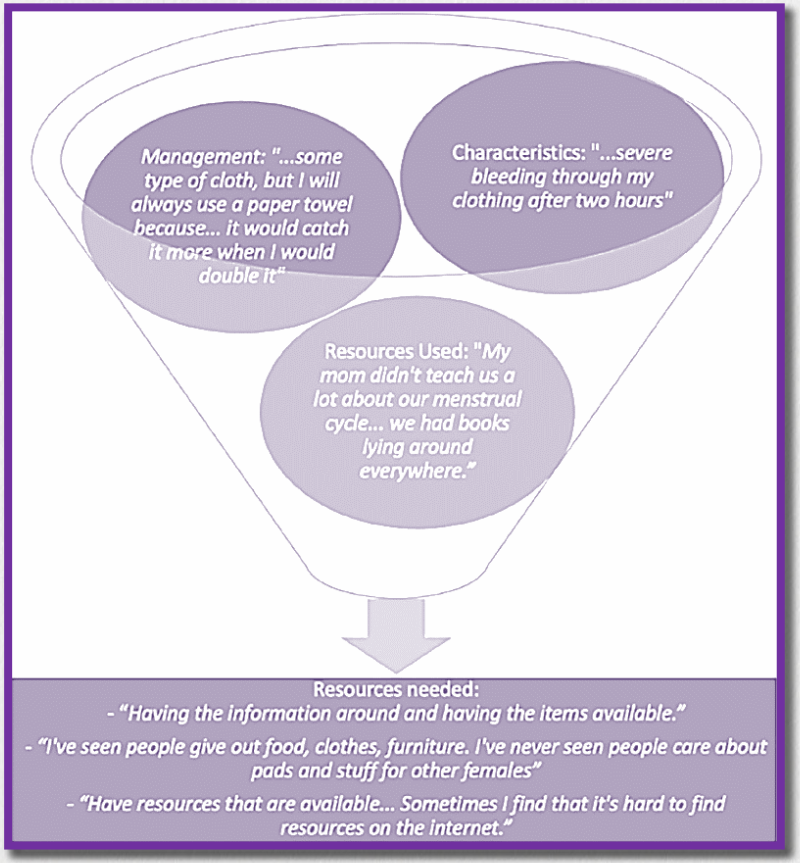
Menstrual hygiene management means access to supplies necessary for products to collect menstrual flow, access to areas for bathing/washing, and acceptable private facilities for self-hygiene care.

Inadequate menstrual hygiene management has been associated with negative psychosocial consequences, school truancy, urogenital infections, lower use of reproductive health services, absence from work, avoidance of sports, and increased high risk behaviors

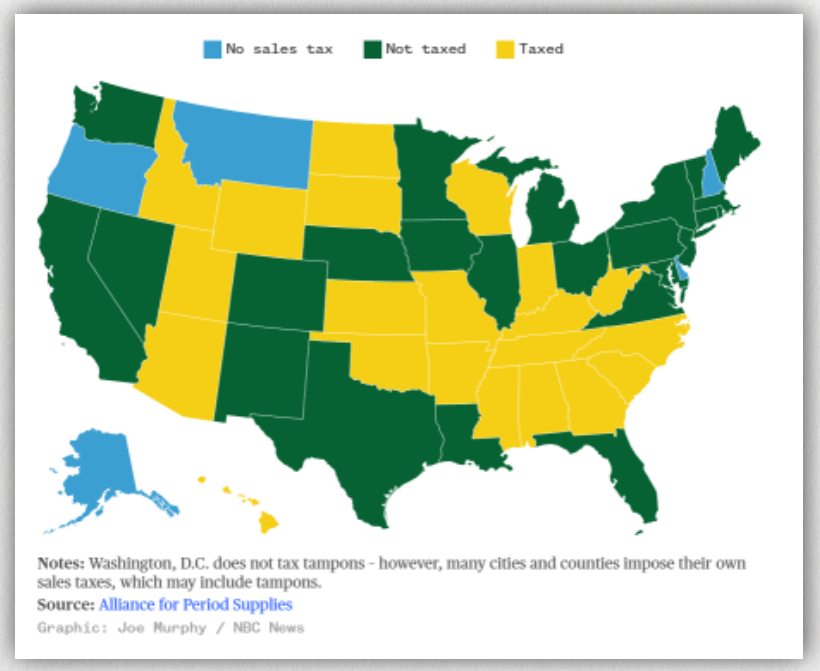
Harrison ME, et al. NASPAG Position Statement: Eliminating Period Poverty in Adolescents and Young Adults Living in North America. J Pediatr Adolesc Gynecol. 2022;35(6):609-611.

Period poverty in Philadelphia, PA

- Inadequate education (girl, parents, health care system)
- Inadequate social support
- Lack of resources
- Physical symptoms, i.e. pain, bloating, emotional distress
- Heavy bleeding



Casola AR, et al. Examining menstrual health experiences in Philadelphia, PA: A qualitative investigation. Womens Health (Lond). 2024 ;20:17455057241251975. PMID: 38738597.



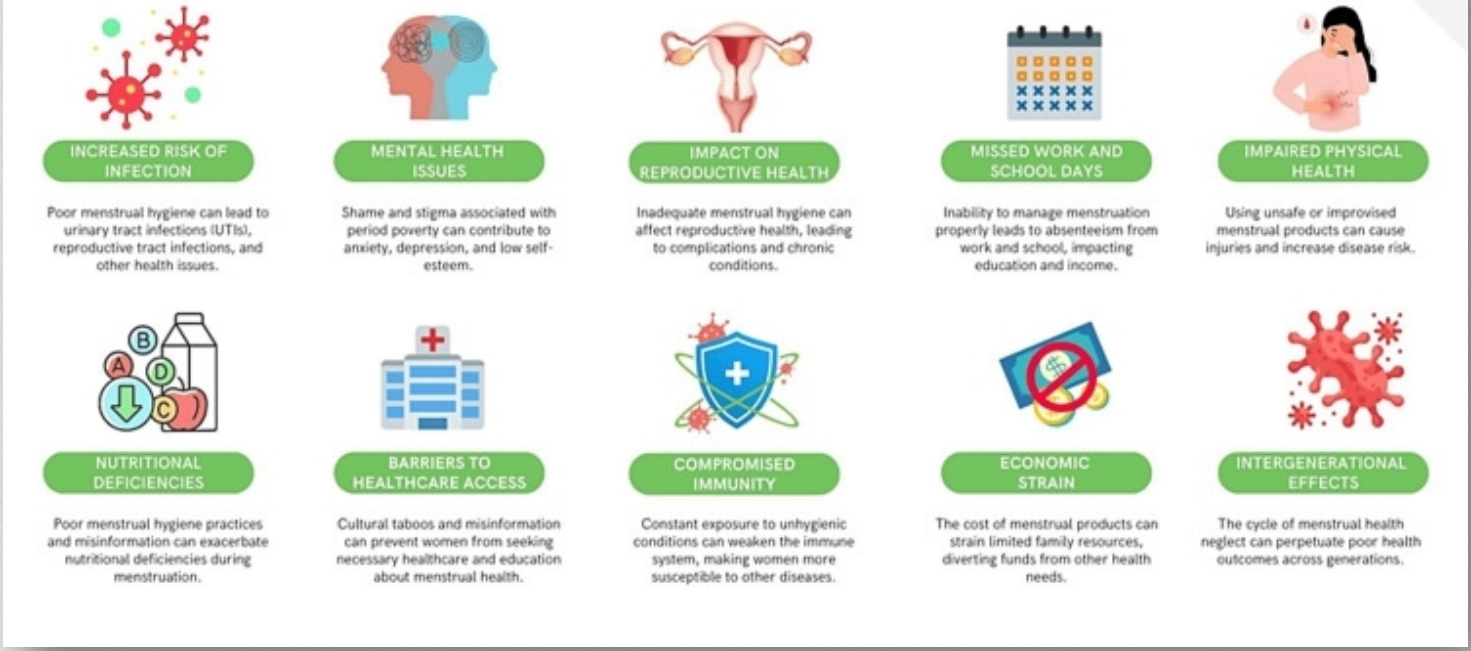
Tampon Tax

Twenty states tax the sale of tampons. This tax can pose a heavy financial burden for people who menstruate, especially homeless and incarcerated individuals.

Elimination of such "pink taxes" can improve access to menstrual health

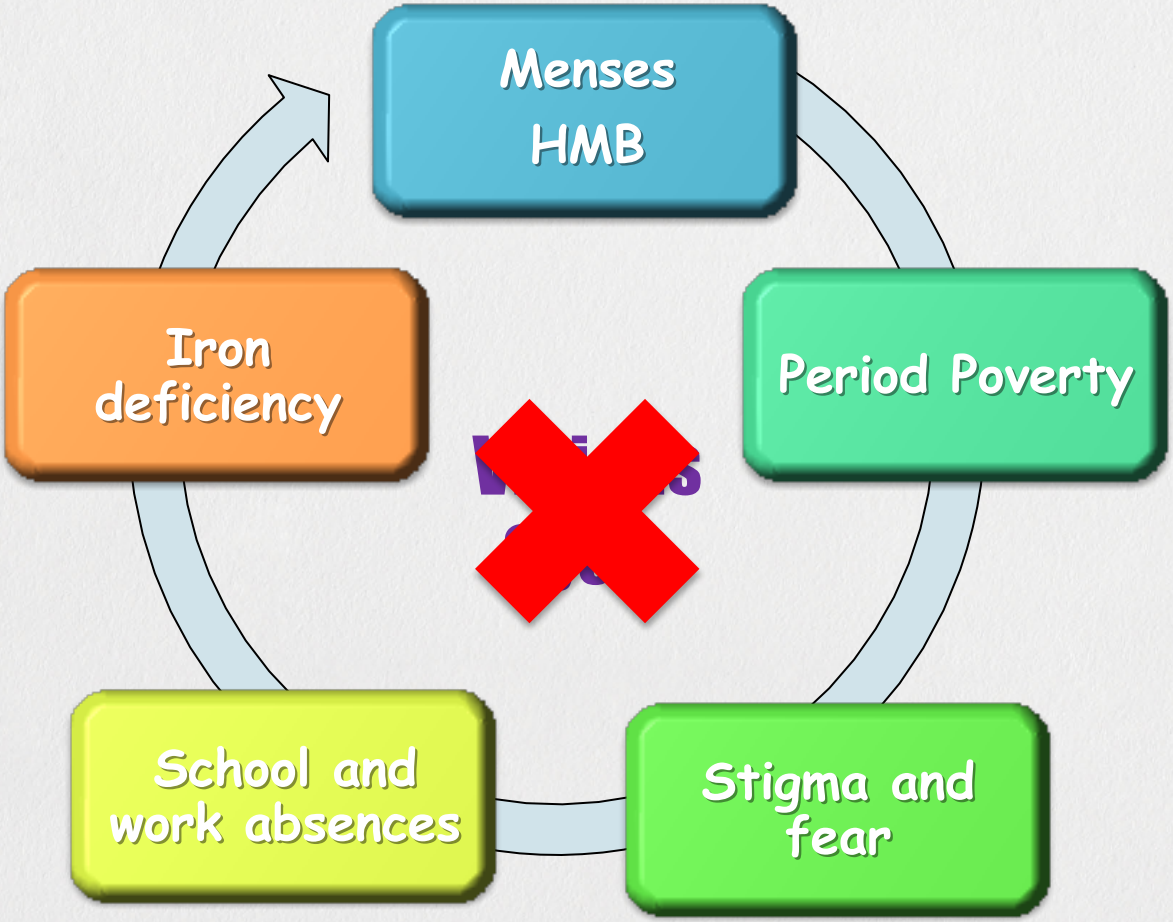
Calderón-Villarreal A. Lancet Reg Health Am. 2023 Nov 24;29:100637. PMID: 38077619

Impacts of Period Poverty on Public Health



Mohd Tohit, et al. Cureus. 2024;16(6):e62499. doi: 10.7759/cureus.62499. PMID: 38887745.

MENSES ARE A "VITAL SIGN" OF HEALTH AND WELL-BEING IN GIRLS AND WOMEN


Menses
HMB
Period Poverty
Stigma and fear
School and work absences
Iron deficiency

Take	Take a thorough menstrual and family history
Do not start	Do not start COCs in adolescents with irregular menses and/or symptoms of hyperandrogenism prior to referral to endocrinologist/adolescent medicine specialist
Initiate	Initiate discussions with parents and patients regarding menstruation, menstrual hygiene, and available resources, particularly for those with specific challenges
Consider	Consider and discuss individual needs regarding treatment for heavy menstrual bleeding

Changes you may wish to make in practice:

1. Knowledge regarding how to evaluate an adolescent girl regarding reproductive health
2. Anticipatory guidance to educate girls and their parents/caretakers about menarche and subsequent menses. Set expectations.
3. Ask about pubertal progression and menstrual history
4. Assess pubertal status on physical examination
5. Be able to differentiate normal from abnormal menstrual patterns
6. Develop and initiate a reproductive health plan for girls especially those with special needs

ACOG Committee Opinion No. 651: Menstruation in Girls and Adolescents: Using the Menstrual Cycle as a Vital Sign. Obstet Gynecol. 2015 Dec;126(6):e143-e146. PMID: 26595586.

References

For more information on this subject, see the following publications:

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- Streur CS, Kreschmer JM, Ernst SD, Quint EH, Rosen MW, Wittmann D, Kalpakjian CZ. "They had the lunch lady coming up to assist": The experiences of menarche and menstrual management for adolescents with physical disabilities. Disabil Health J. 2023;16(4):101510. PMID: 37544804
- O'Brien SH. Evaluation and management of heavy menstrual bleeding in adolescents: the role of the hematologist. Hematology Am Soc Hematol Educ Program. 2018 Nov 30;2018(1):390-398. PMID: 30504337
- Hennegan J, et al. Women's and girls' experiences of menstruation in low- and middle-income countries: A systematic review and qualitative metasynthesis. PLoS Med. 2019;16(5):e1002803. PMID: 31095568

Thank you

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