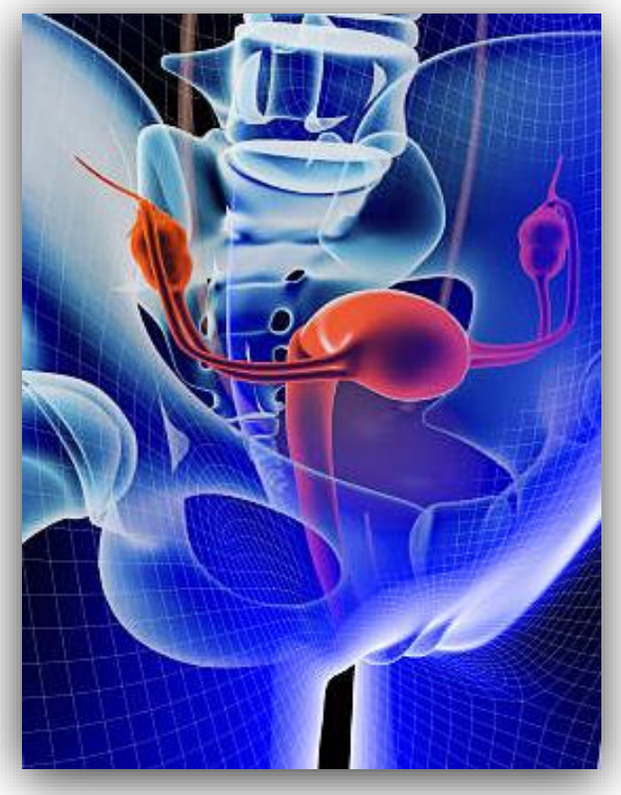
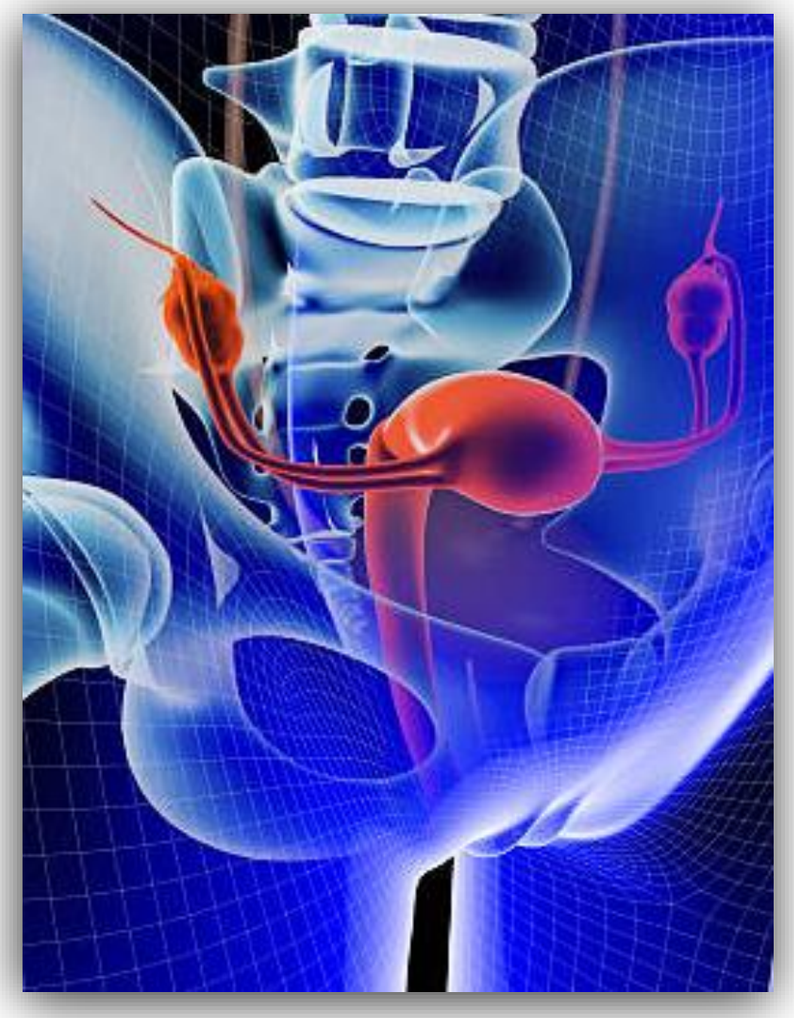
OB GYN SONOGRAPHY REVIEW

Pediatric & Postmenopausal Sonography



Course Outline

- Pediatric Sonography
  - Anatomy & physiology
  - Pediatric GYN pathology
- Postmenopausal Sonography
  - Anatomy & physiology
  - Postmenopausal GYN pathology



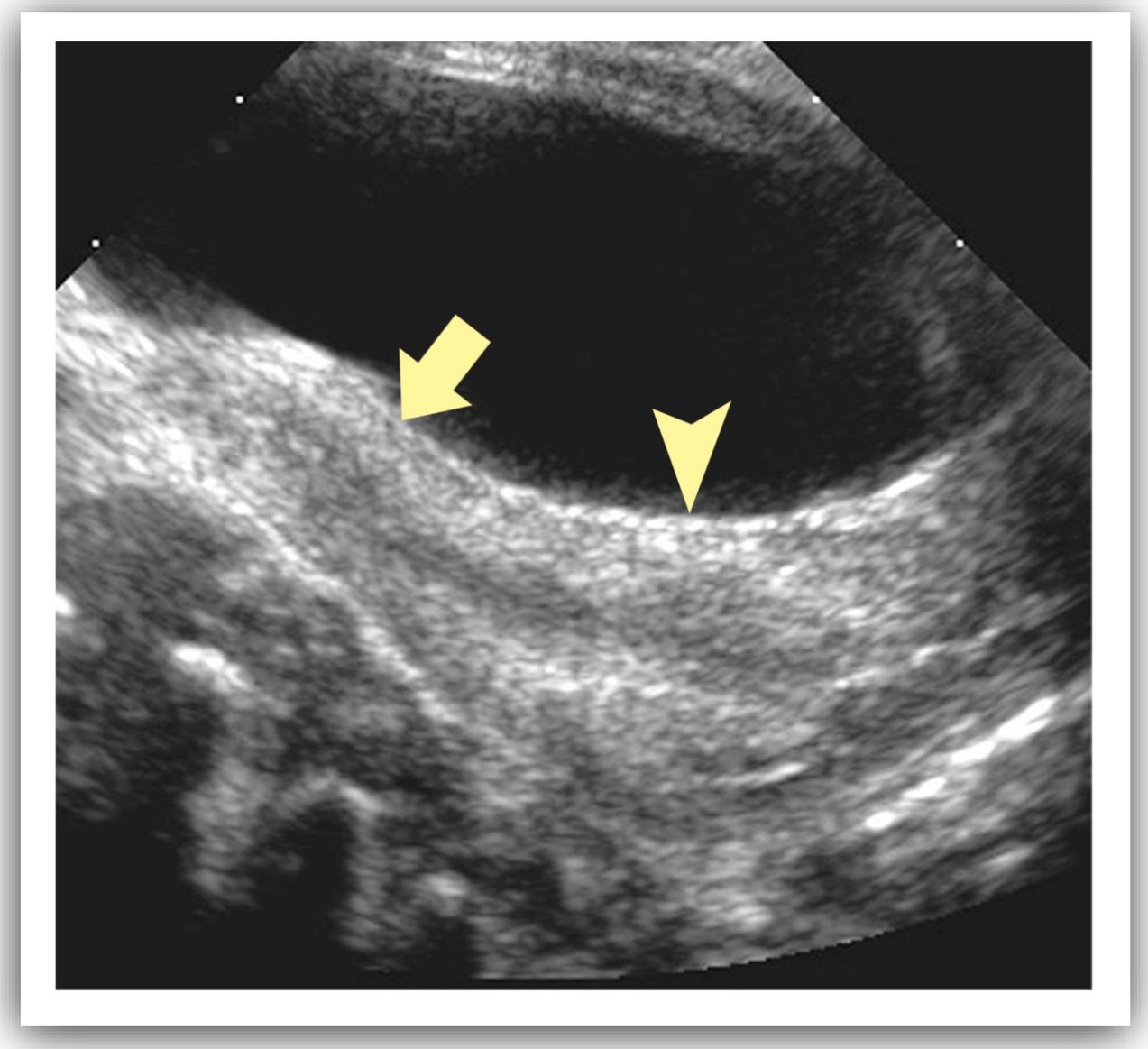
Pediatric Sonography

Anatomy & Physiology - Uterus

- Neonatal uterus responds to maternal hormones *in utero*
- Premenarchal uterine appearance:
  - Cervix is 2x diameter of uterine corpus
  - Cervix is 2/3 of total length of uterus
  - “Tubular” shaped uterus
  - Infantile appearance maintained until ≈ 7 years of age
  - Small cysts may be seen in ovaries

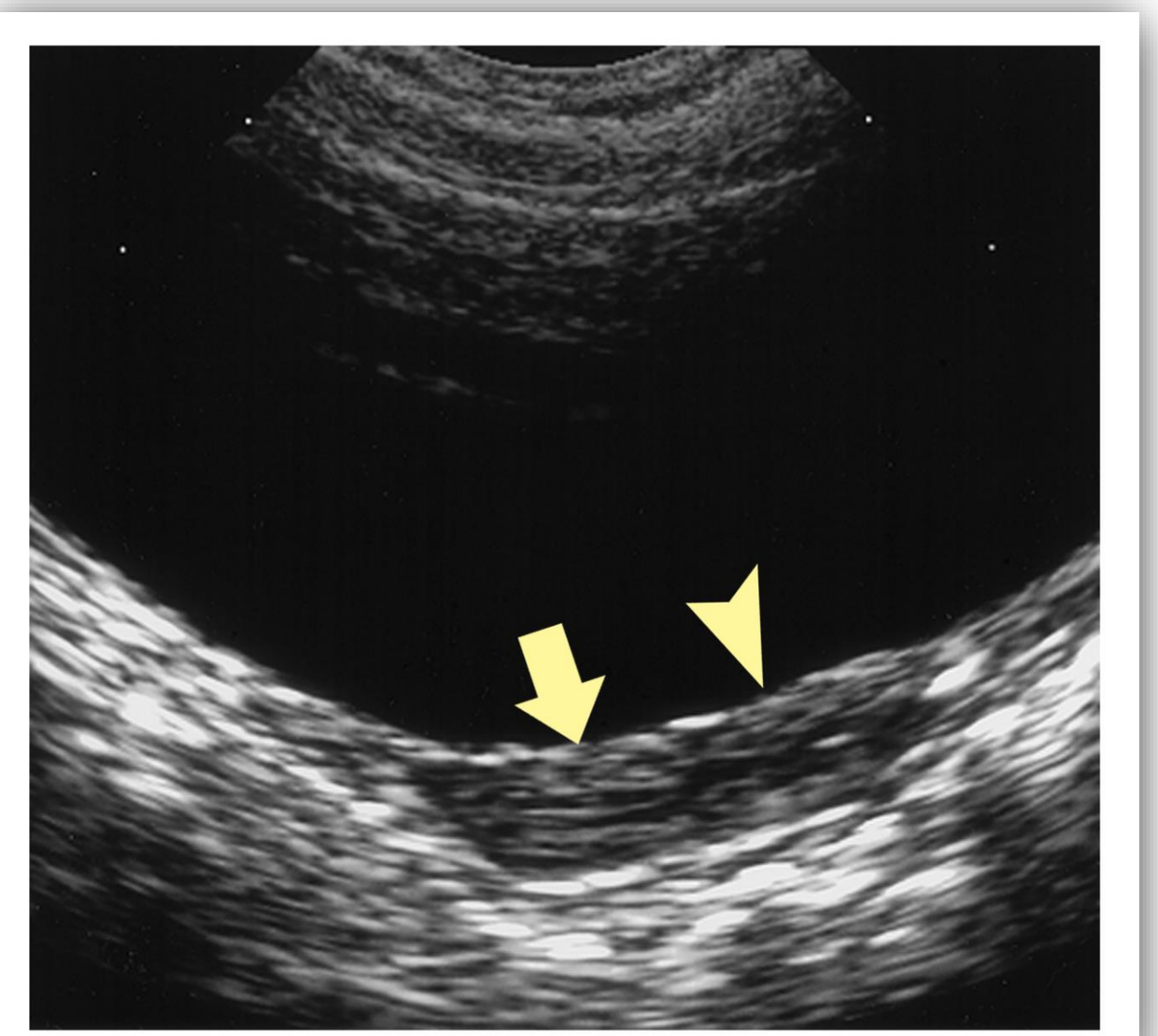
Mean Pediatric Uterine Size		
Age Group	**Length (cm)**	**AP Diameter (cm)**
Neonatal	3.5	1.4
Premenarchal	2.5 – 4	1.1
Postmenarchal	5 – 9	3 - 4

Arrow – uterus
Arrowhead = cervix



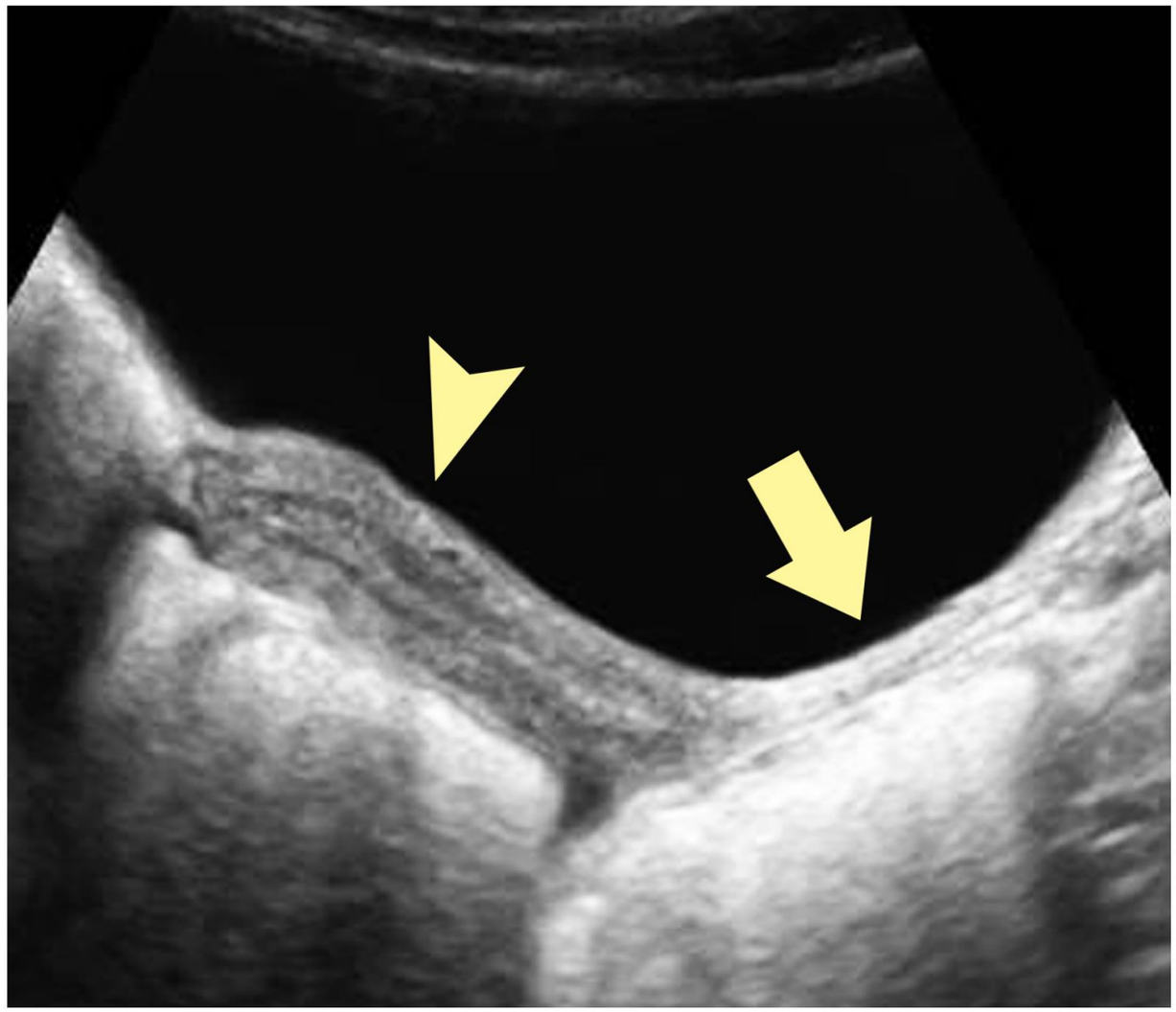
Neonatal uterus

Arrow – uterus
Arrowhead = cervix



Premenarchal uterus

Arrow – uterus
Arrowhead = cervix

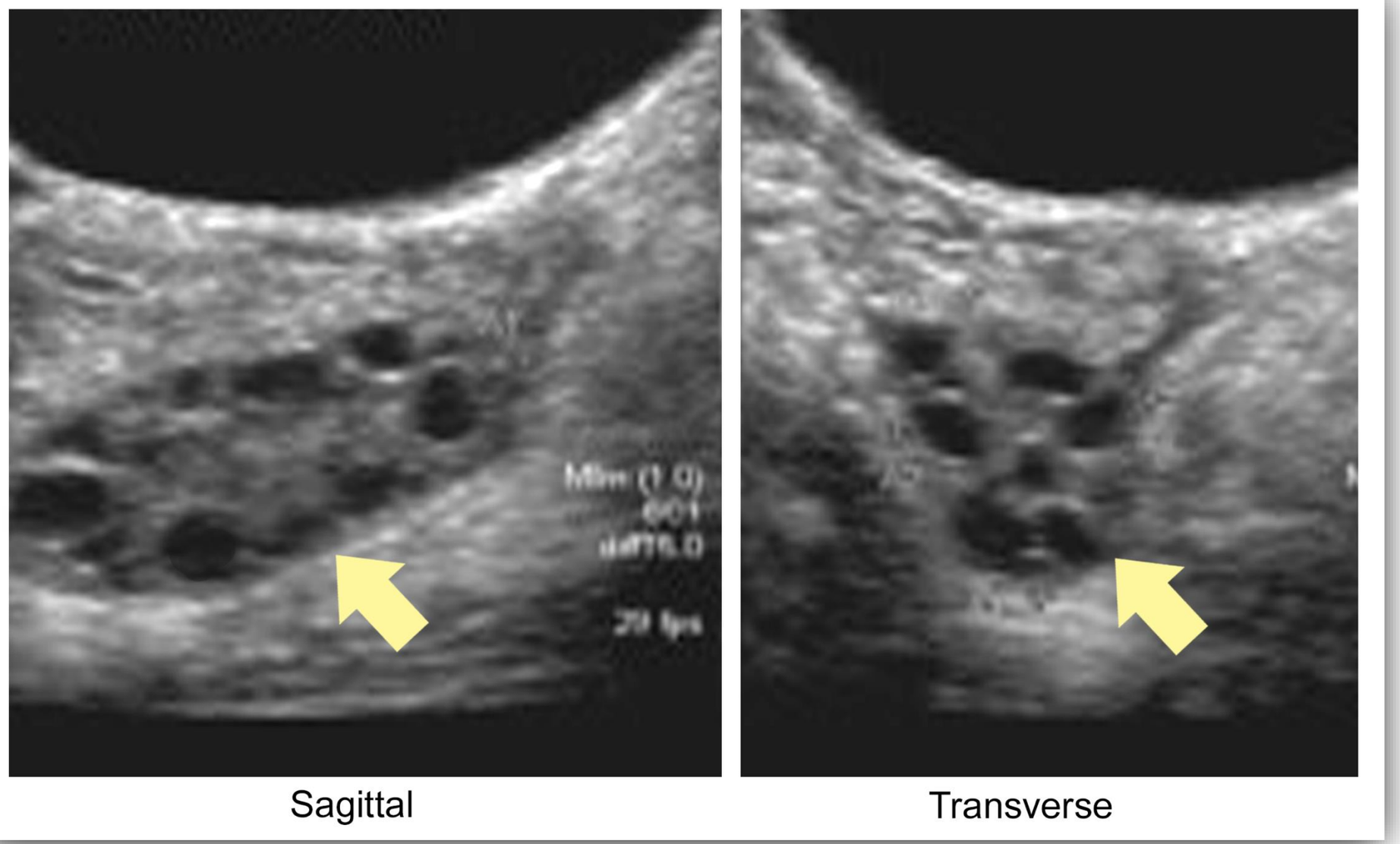


Postmenarchal uterus

Anatomy & Physiology - Ovaries

- Neonatal ovaries responds to maternal hormones *in utero*
- As hormonal effects diminish:
  - Ovaries return to pediatric dimensions
  - Small cysts may be seen

Mean Pediatric Ovarian Volume	
Age Group	**Volume (cc)**
Neonatal	≥1.0
1 – 6 years	≤ 1.0
6 years - menarche	2 – 4
Postmenarche	8 - 10



Sagittal

Transverse

Physiological cysts

Pediatric GYN Pathology

- Uterine masses
  - Hydrocolpos
  - Uterine tumors
  - Vaginal masses
- Ovarian masses
  - Ovarian cysts
  - Germ cell tumors
  - Ovarian torsion

Hydrocolpos

- Condition in which fluid is contained within the uterine cavity and/or vagina

- Associated with:
  - Imperforate hymen
  - Vaginal septum
  - Acquired obstructions of the vagina or cervix

Hydrocolpos

- Terminology relating to the location and type of fluid contained within the reproductive cavities:

Fluid Type	
Hemato-	blood
Pyo -	pus
Hydro -	2 – 4

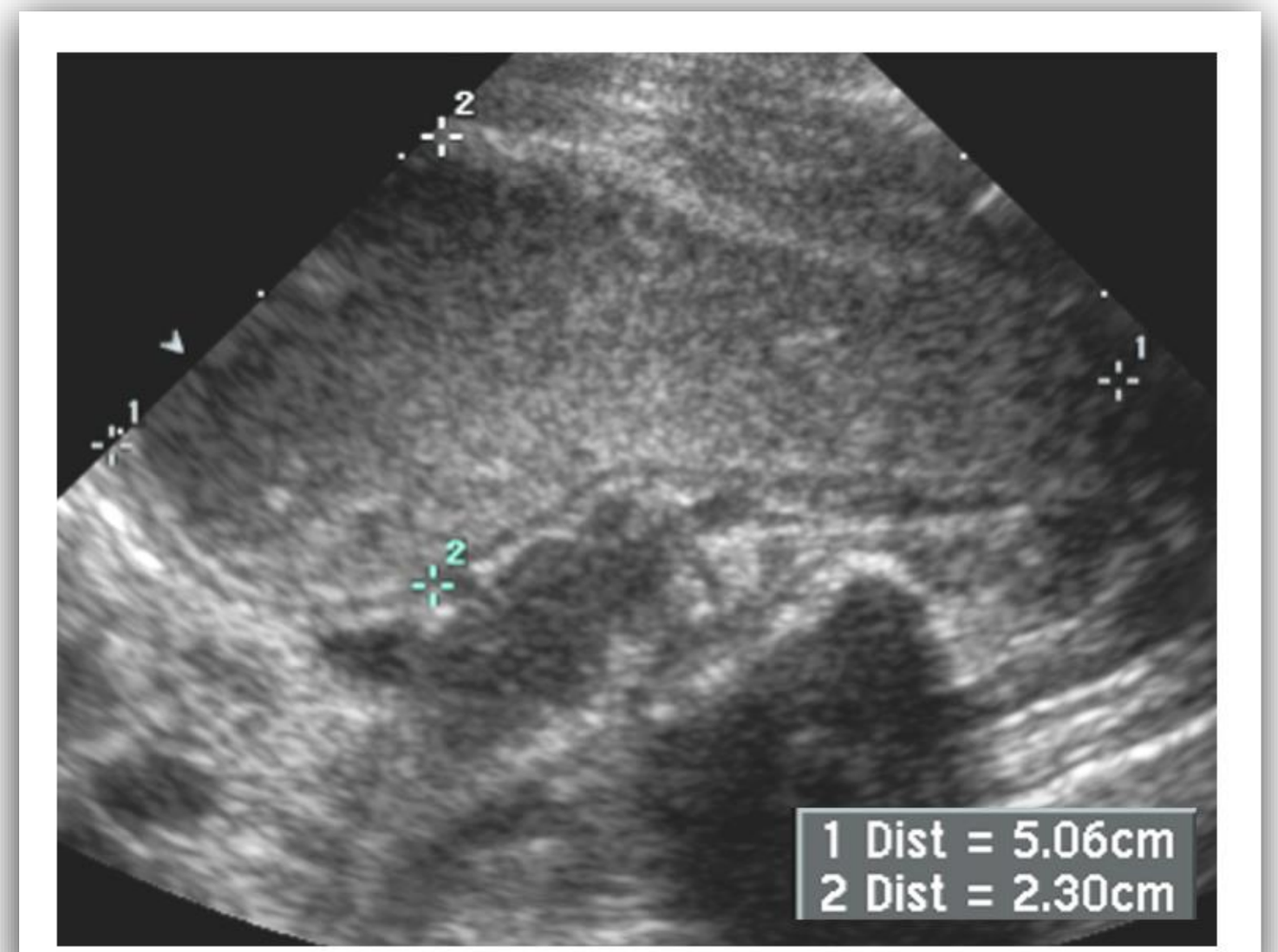
Location	
Metro-	uterus
Colops	vagina

Examples	
Hydrometrocolpos	Water, blood in uterus and vagina
Hematometroclops	Bloods in uterus and vagina

PEDIATRIC GYN PATHOLOGY - UTERINE

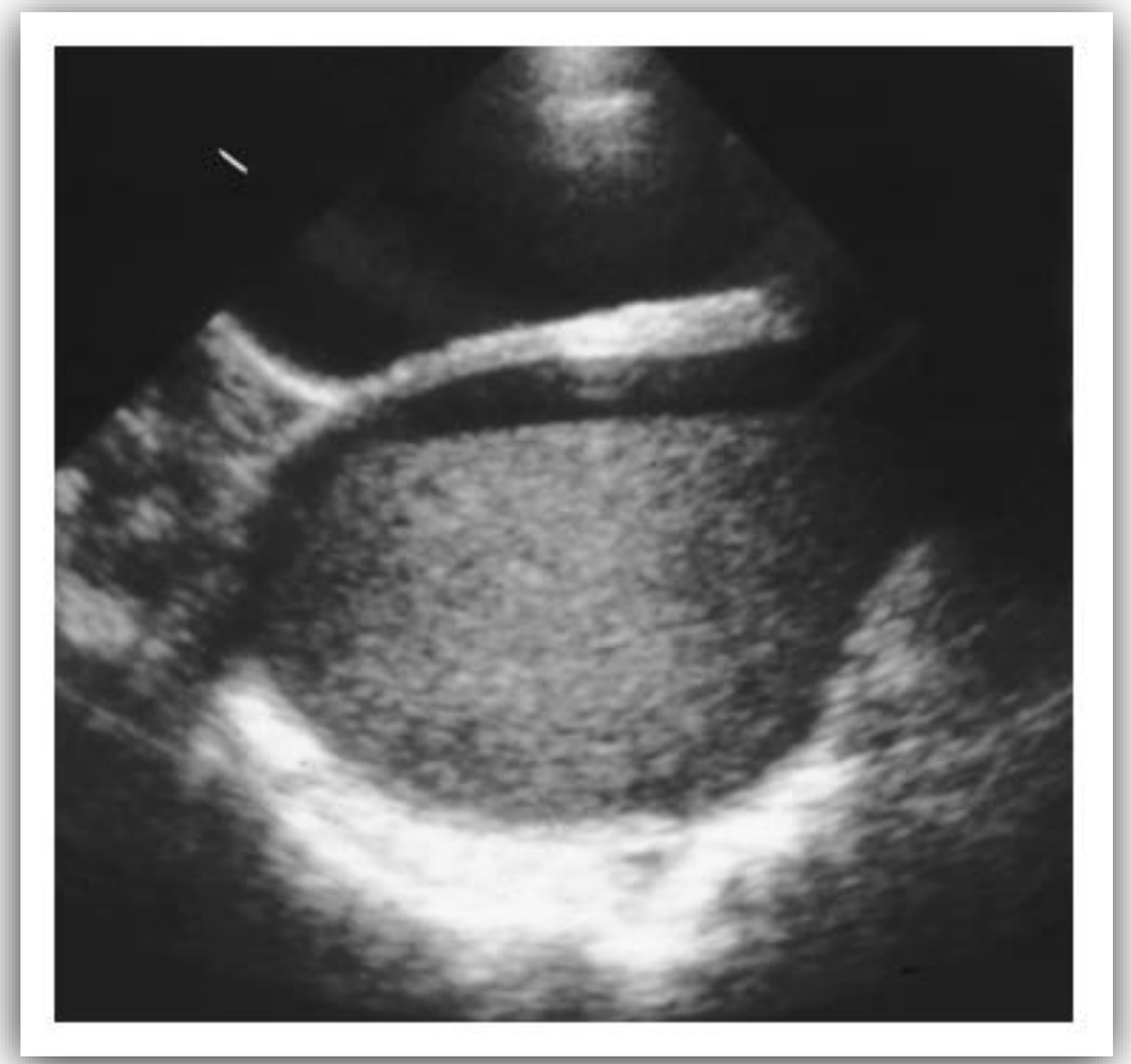
Hydrocolpos

PEDIATRIC GYN PATHOLOGY - UTERINE



Hydrometrocolpos

PEDIATRIC GYN PATHOLOGY - UTERINE



Fluid-fluid level

Uterine Tumors

- Extremely rare in pediatric patients

Postmenopausal Sonography

Anatomy & Physiology - Uterus

- Postmenopausal uterine appearance:
  - Normal proportion and contour of cervix and uterine body
  - Normal endometrium appears as a thin stripe
  - Decreased estrogen levels ⇨ thinner stripe
  - Normal AP measurement:
  - 5 mm upper limits normal (non-HRT)

POSTMENOPAUSAL SONOGRAPHY

Normal contour of cervix and uterine body

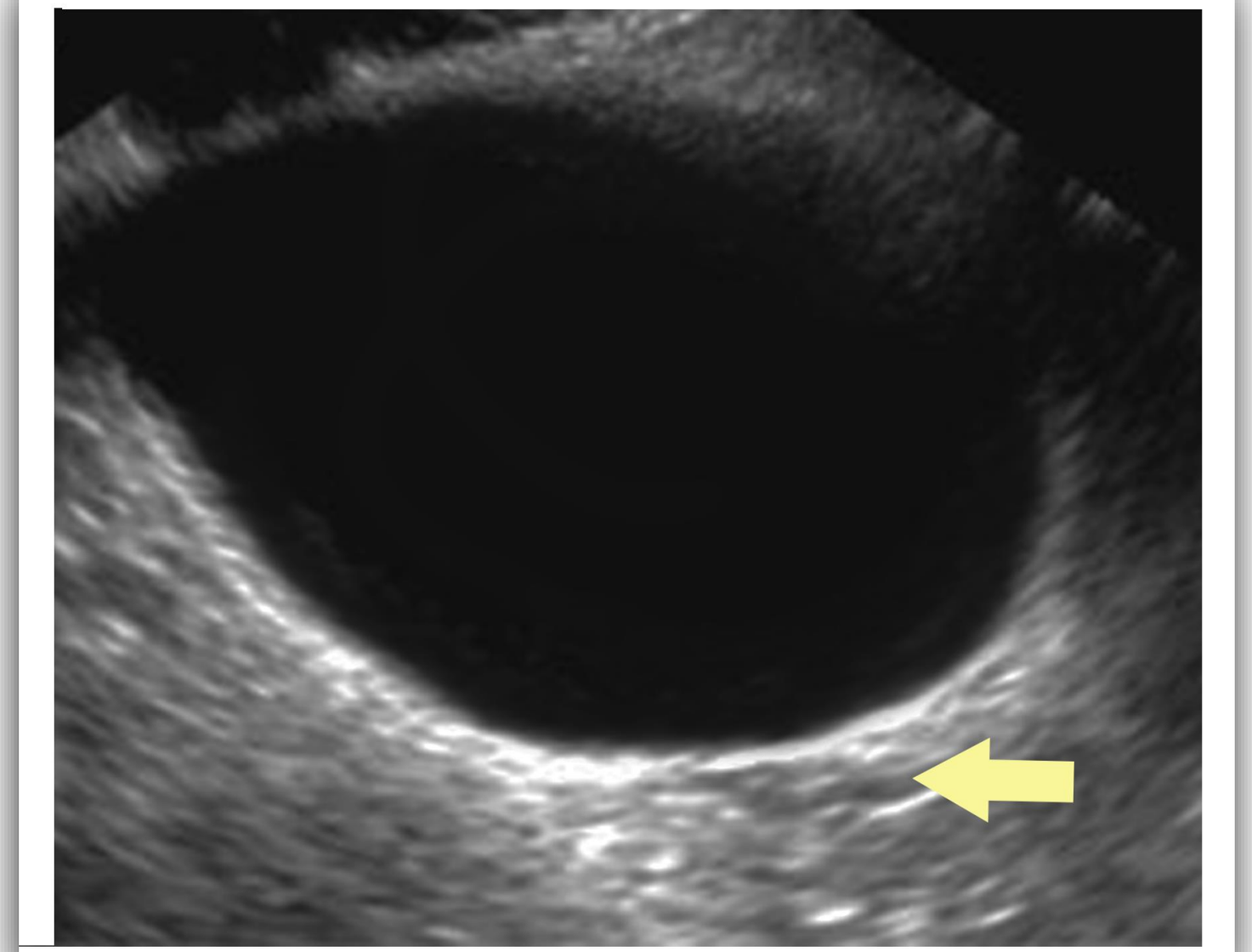
POSTMENOPAUSAL SONOGRAPHY

Normal postmenopausal endometrium

Anatomy & Physiology - Ovaries

- Ovaries gradually become unresponsive to gonadotropins as a woman ages
- Progesterone, estrogen and estradiol levels significantly decrease
- Sonographic appearance of postmenopausal ovaries:
  - Decreased ovarian size and volume
  - Size progressively decreases as postmenopausal period increases
  - Absence of cystic follicles
  - Average ovarian size: 2.2 x 1.2 x 1.1 cm

POSTMENOPAUSAL SONOGRAPHY



Normal postmenopausal ovary

Indications for Sonography

- Evaluate endometrium in patient with vaginal bleeding
- Evaluate endometrium in patient on hormone replacement therapy (HRT)
- Evaluate uterus and ovaries in a patient with a pelvic mass

Postmenopausal Vaginal Bleeding

- Vaginal bleeding occurring more that 6 months after cessation of menses. Causes include:
  - Exogenous estrogen administration (HRT) MOST COMMON
  - Endometrial polyps
  - Endometrial atrophy
  - Endometrial hyperplasia
  - Endometrial carcinoma
  - Estrogen-producing ovarian tumor
  - Cervical carcinoma

Hormone Replacement Therapy (HRT)

- Administration of estrogen & progesterone after menopause may relieve some common symptoms
- Can help reduce risk of osteoporosis and cardiovascular disease
- Unopposed estrogen, however, is associated with and increased risk of endometrial hyperplasia and carcinoma

Hormone Replacement Therapy (HRT)

- Sonographic findings include:
  - Endometrial stripe up to 8 mm on unopposed estrogen
  - Endometrial stripe up to 10 -1 2 mm in estrogen phase; less during progesterone phase
  - Cyclical hormones ➡ menstrual type endometrium
  - Continuous hormones ➡ endometrial stripe < 8 mm

POSTMENOPAUSAL SONOGRAPHY

Postmenopausal Endometrial Thickness	
Hormone Status	**Upper Limits of Normal (mm)**
No HRT	5
HRT: Combined (estrogen phase)	10 - 12
HRT: Combined (progesterone phase)	< 10
HRT: unopposed estrogen	8
HRT: cyclical	menstrual type endometrium
HRT: continuous	< 8

Postmenopausal GYN Pathology

- Pelvic ovarian masses include:
  - Physiological cysts (follicular, corpus luteum)
  - Benign ovarian masses (teratomas, dermoids)
  - Polycystic ovaries
  - Solid ovarian neoplasms (Sertoli-Leydig, granulosa cell)

Postmenopausal GYN Pathology

- Pelvic uterine masses include:
  - Leiomyomas (fibroids)
- Pelvic adnexal masses include:
  - Endometriosis
  - Salpingitis
  - Tubo-ovarian abscess

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