

Recognizing Pubertal Onset & Clues on When to Refer for Possible Central Precocious Puberty



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Recognizing Pubertal Onset: Stating the Obvious (or Not So Obvious) Reasons

- Listen carefully to the parent explain what they have noticed
- Perform a thorough assessment including genital examination, review of growth and weight, and growth rate charts at every visit
 - Determine if height is consistent with genetic potential – ask parent heights and puberty
 - Plot growth rate and look for increased rate of pubertal onset
 - Genital exams are awkward for physician and patient alike, and are often not thorough
 - Palpate for breast tissue
 - Palpate testes size
 - Look for pubic hair between labia or under scrotum – not just across symphysis pubis
 - This should be at each well child visit for assessing rate of progression
- If you suspect CPP, refer to pediatric endocrinologist
 - Send growth records with patient
 - If you order a bone age radiograph, send image with patient to the consult

CPP Is Characterized by Several Consistent Features— Not a Mystery



Signs/Symptoms

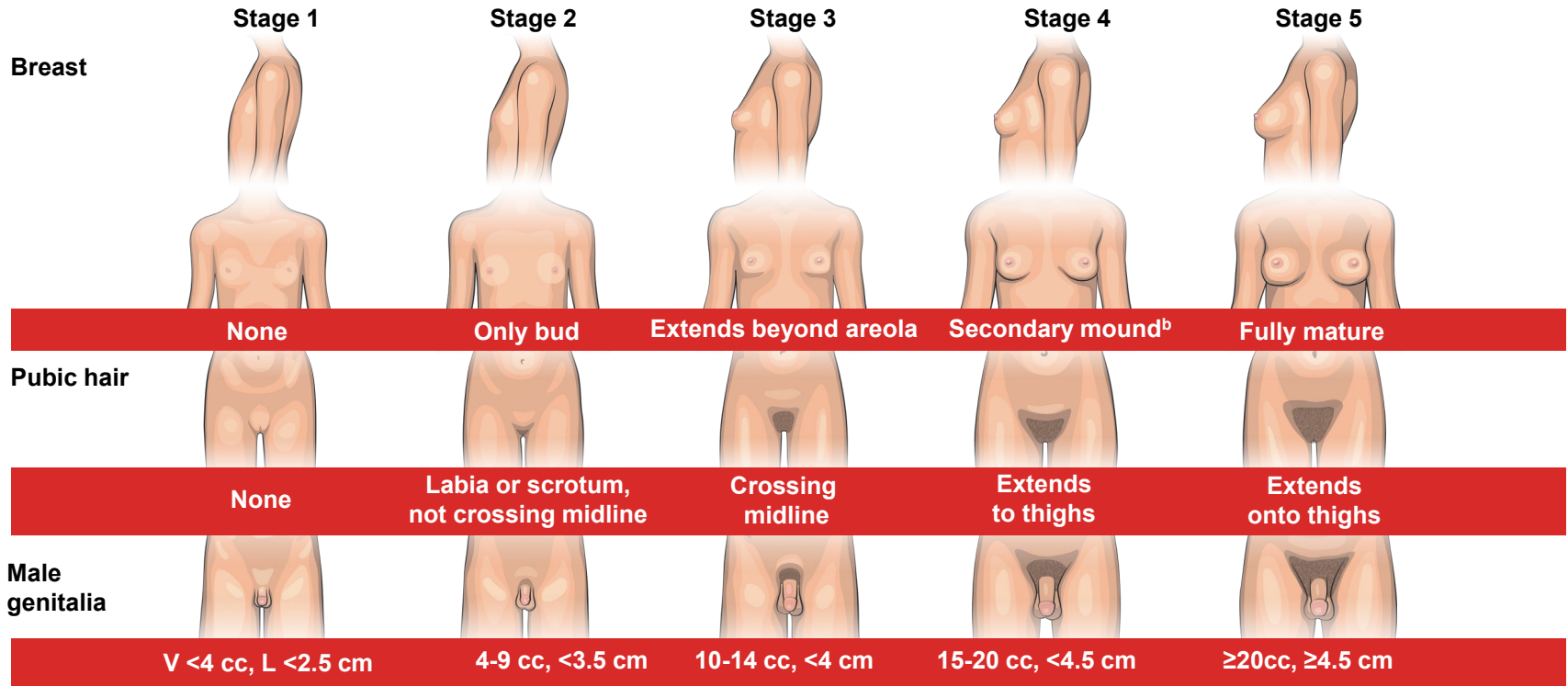
- Early onset¹
- Rapid pubertal progression²
- Breasts or testicular size increase³
- With or without pubic hair³
- Elevated LH, FSH, estradiol/testosterone^{1,3}
- Increased growth rate^{1,3}
- Advanced bone age^{1,3}

FSH, follicle-stimulating hormone; LH, luteinizing hormone.

References: 1. De Silva N, Tschirhart J. *Curr Treat Options Peds*. 2016;2(3):121-130. 2. Klein KO et al. *J Clin Endocrinol Metab*. 2001;86:4711-4716.

3. Kaplowitz P, Bloch C. *Pediatrics*. 2016;137(1):e2015373.

More Clues for Physical Exam: Tanner Stages^a



V, testicular volume (assessed by orquidometer comparison); L, penis length.

^aLanguage and description for breast and pubic hair region (male and female) was provided by Dr. Klein.

^bNipple diameter increases and matures.

4 Reference: Tanner Scale. <http://www.scientificspine.com/spine-scores/tanner-scale.html>. Accessed September 20, 2019.

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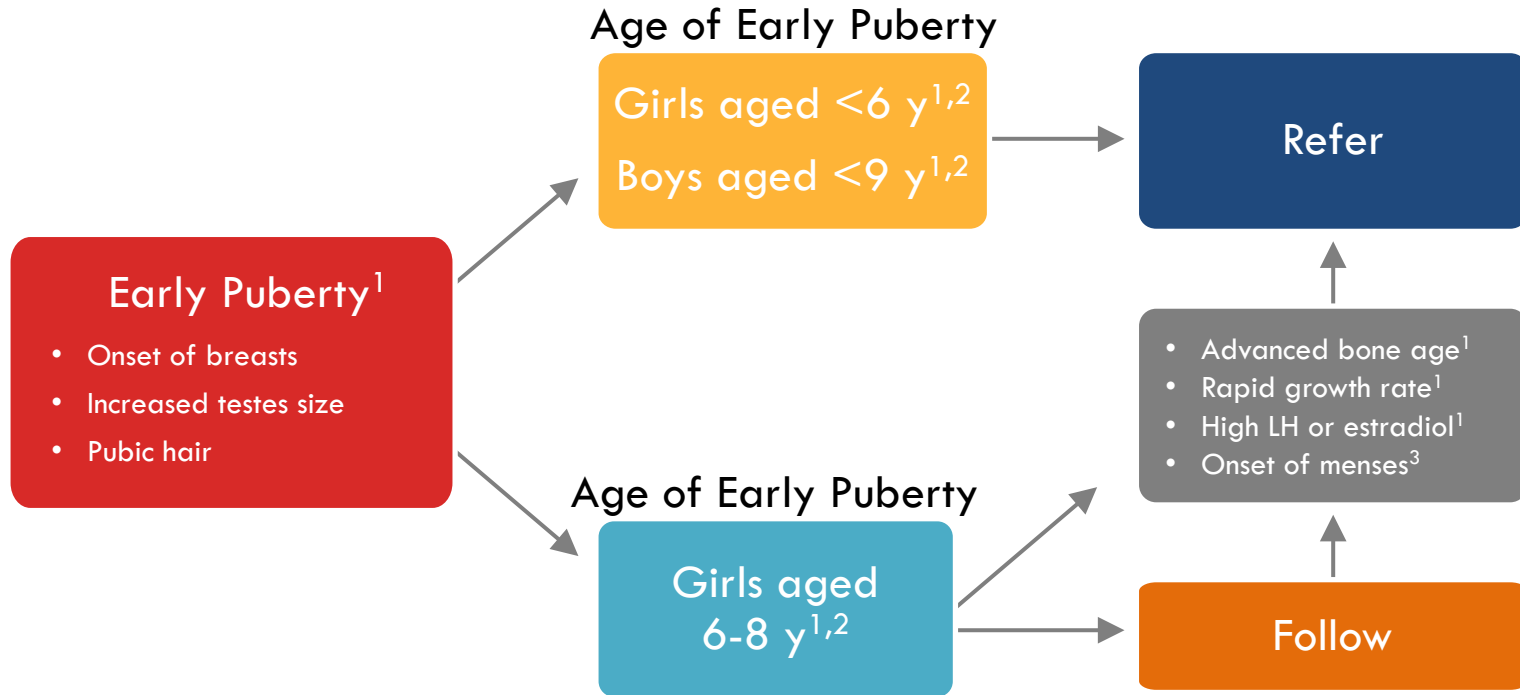
CPP: Timing and Pace of Puberty

- Precocious puberty considered when:
 - Puberty begins in girls <8 years old¹
 - Puberty begins in boys <9 years old¹
 - Pubertal progression is rapid²
- Ethnicity affects pubertal timing^{3,4}
 - African-American and Hispanic children have earlier normal puberty^{3,4}
- Earlier onset of breast development may not progress to CPP*⁴
 - Premature thelarche is not necessarily caused by hypothalamic pituitary gonadal activation
 - Breast exam may be difficult secondary to obesity
- Some CPP is slowly progressive⁴ – bone age not advanced, but important to repeat in 3 – 6 months

*Referral to pediatric endocrinologist for diagnosis CPP with physical examination, hormonal assays and imaging

References: 1. Kaplowitz P, Bloch C. *Pediatrics*. 2016;137(1):e20153732. 2. Klein KO et al. *J Clin Endocrinol Metab*. 2001;86:4711-4716. 3. Kaplowitz PB et al. *Horm Res Paediatr*. 2018;90(1):1-7. 4. Krishna KB et al. *Horm Res Paediatr*. 2019:1-16.

Clues on When to Refer



LH, luteinizing hormone.

References: 1. Kaplowitz P, Bloch C. *Pediatrics*. 2016;137(1):e2015373. 2. De Silva N, Tschirhart J. *Curr Treat Options Peds*. 2016;2(3):121-130.

3. Chen M, Eugster EA. *PaediatrDrugs*. 2015;17(4):273-281.