# Infant with a Variation in Sex Characteristics (Ambiguous Genitalia)

| Suggestive history and physical findings | Initial laboratory and/or radiologic work-up can include | When to refer | Items useful for consultation | Additional information |
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| History:<br>• Poor feeding<br>• Lethargy<br>• Family history of SIDS<br>• Family history of intersex variation<br>• Family history of consanguinity<br><br>Physical findings:<br>• Low or high blood pressure<br>• Bilateral cryptorchidism/undescended testes<br>• Hypospadias with unilateral cryptorchidism/undescended testes<br>• Posterior labial fusion<br>• Skin hyperpigmentation<br>• Micropenis<br><br>Differential Diagnosis | Blood Tests:<br>• Sodium<br>• Potassium<br>• Glucose<br>• Cortisol<br>• 17-OH progesterone drawn no earlier than day 3<br>• Karyotype<br><br>Other tests to consider after consultation with Pediatric Endocrinology:<br>• Hormone studies<br>• FISH for SRY<br>• Abdominal/pelvic ultrasound | Urgent:<br><br>All cases of variations in sex characteristics are considered urgent and should be referred to a pediatric endocrinology team with a multidisciplinary approach to these patients.<br><br>Sex assignment should not be done until evaluation is completed by the multidisciplinary team.<br><br>Find a Pediatric Endocrine Provider | • Results of newborn screen. However, do not delay request for consultations while awaiting screen results.<br>• Pertinent medical records<br>• Recent laboratory and radiologic studies | Additional Information<br><br>PES Educational Video Available in English and Spanish<br><br>Handout developed by a British support organization is available in English and Spanish:<br><br>https://www.dsdfamilies.org/application/files/1615/4236/8548/firstdays_dsdfamilies.pdf<br><br>https://dsdfamilies.org/application/files/4315/3632/8682/DSD_booklet_spanish_web.pdf<br><br>Congenital Adrenal Hyperplasia: A Guide for Families<br><br>References |

## Differential Diagnosis for Ambiguous Genitalia

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| XY DSD | Partial gonadal dysgenesis<br>Deficiency of testosterone biosynthesis<br>5 alpha reductase-2 deficiency<br>Abnormal androgen receptor activity<br>(Androgen insensitivity syndrome) |
| XX DSD | Abnormal fetal androgen production<br>(Congenital adrenal hyperplasia, CAH)<br>Excess maternal androgen production<br>Placental aromatase deficiency<br>Drugs administered to mother during pregnancy |
| Syndromes with multiple congenital abnormalities | VACTERL syndrome<br>CHARGE syndrome |
| Sex Chromosome DSD | 45,X: Turner Syndrome and variants<br>(mosaicism may result in atypical genitalia)<br>47,XXY: Klinefelter syndrome and variants<br>45,X/46,XY: Mixed gonadal dysgenesis and ovotesticular DSD<br>46,XX/46,XY: Chimeric and ovotesticular DSD |

## Additional information

While evaluating a child with a variation in sex characteristics the primary concern should be:

1. Is this associated with a life-threatening condition? Congenital adrenal hyperplasia is associated with adrenal insufficiency and may also be associated with salt wasting. If not recognized and treated urgently, this can lead to shock.

2. Sex of rearing: Ideally a decision about sex of rearing should be made as early as possible, but only after appropriate work up in the setting of a multidisciplinary team has been done. It can be very traumatic for family and the patient to change the sex designation later on in life. Care should be taken to avoid calling the baby "baby boy" or "baby girl" until appropriate work up is done and a decision has been made. Defer any questions about surgery to the multidisciplinary team.

## Suggested References and Additional Reading

Flück CE, Güran T. Ambiguous Genitalia in the Newborn. [Updated 2023 Nov 13]. In: Feingold KR, Anawalt B, Blackman MR, et al., editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.;
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