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Core Urology Endocrine–Andrology

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Disclosures

- None



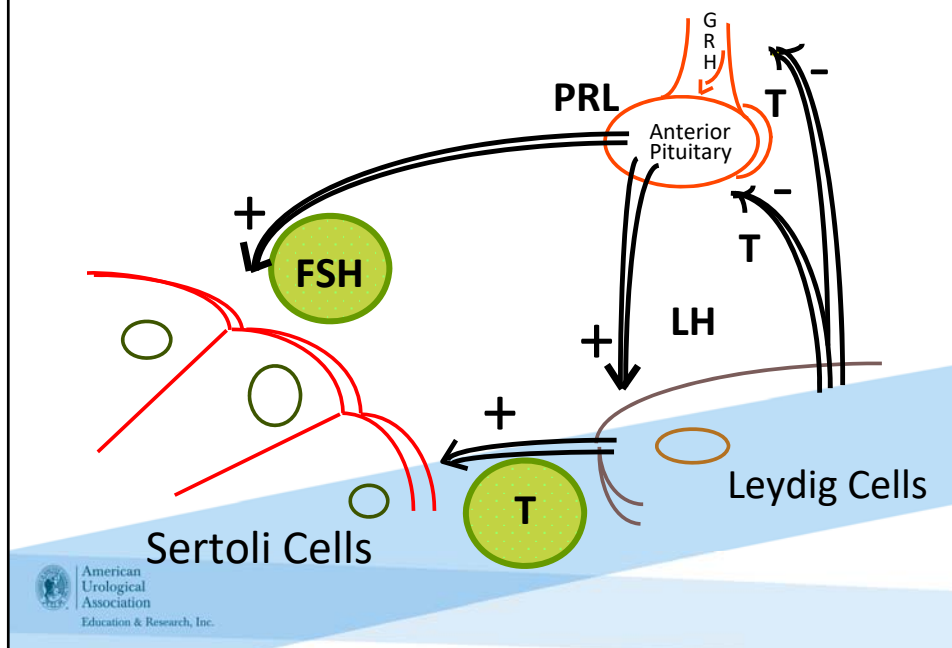
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Objectives

1. Develop an enhanced understanding of the male hypothalamic-pituitary-gonadal axis
2. Describe the evaluation of male hypogonadism
3. Describe normal testicular endocrine and exocrine function
4. Describe treatments and treatment monitoring for male hypogonadism

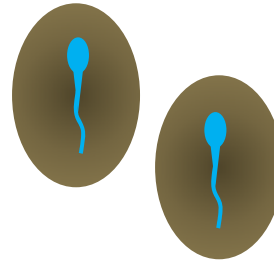
Hypothalamic–Pituitary–Gonadal Axis



Testicular function

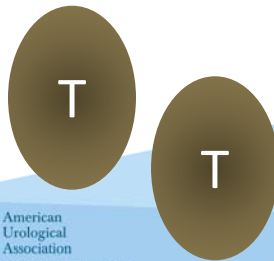
Endocrine

- Androgen production
- Primary feedback is LH
- Sequestered in the serum by SHBG and Albumin
- Key Concept: free and weekly bound Testosterone



Exocrine

- Sperm production
- Primary feedback is FSH
- Spermatogenesis is inhibited by exogenous Testosterone



ARS-Q1

The following disease that manifests as primary hypogonadism is:

- A. Chronic opioid abuse
- B. Kallman Syndrome
- C. Prolactinoma
- D. Klinefelter's Syndrome

AUA Best Practice Statement: Optimal evaluation of the infertile male

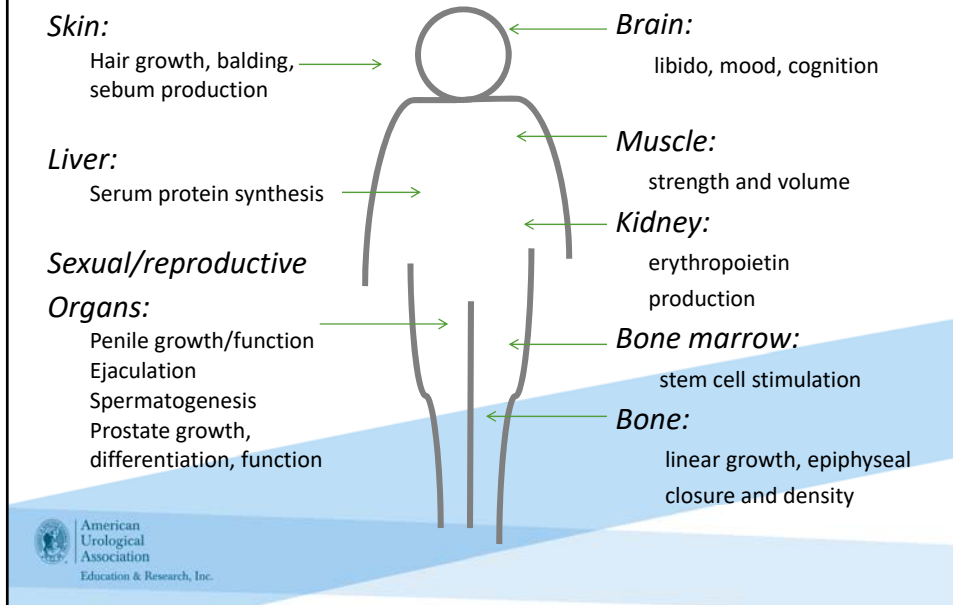
Clinical Condition	FSH	LH	Testosterone	Prolactin
Normal spermatogenesis	Normal	Normal	Normal	Normal
Hypogonadotropic hypogonadism (2°)	Low	Low	Low	Normal
Abnormal spermatogenesis	High/ Normal	Normal	Normal	Normal
Testicular failure (1°)	High	High	Normal/ Low	Normal
Prolactinoma	Normal/ Low	Normal/ Low	Low	High

ARS-Q2

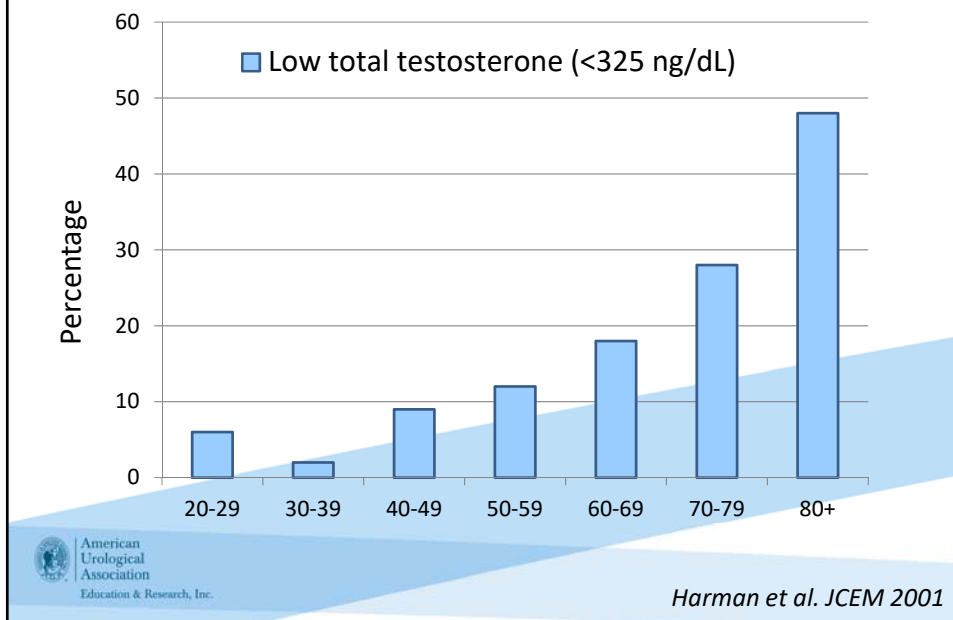
After starting gonadotropin replacement in a man with secondary hypogonadism and azoospermia, semen analysis should be performed after:

- A. One week
- B. One month
- C. Three months
- D. Six months

Endocrine: The Effects of Androgens



Prevalence of Men with Low Testosterone



Male Hypogonadism Diagnosis

- Manifestation of androgen deficiency AND consistently low T level
 - Symptoms and signs
 - Low T x 2, in AM
- Symptoms alone OR low T level alone DO NOT EQUAL hypogonadism
 - Results in misclassification and over-diagnosis



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Bhasin S, et al, J Clin Endocrinol Metab 95: 2536-2559, 2010

Hypogonadism Symptoms and Signs

Sexual

- Poor sexual development
- Decreased libido
- Decreased sexual activity
- ED
- Infertility

Physical

- Gynecomastia
- Decreased male hair
- Decreased muscle mass and physical activity
- Decreased BMD
- Abdominal adiposity

Psychological

- Decreased energy and vitality
- Depressed mood
- Decreased concentration and memory
- Sleep disturbance
- Irritability



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Bhasin S, et al, J Clin Endocrinol Metab 95: 2536-2559, 2010

Other Causes...

- Symptoms and signs not caused by low T level
 - Depression
 - Medications (opioids)
 - Co-morbid illness
- Low T level not caused by hypogonadism
 - Transient T suppression: illness/surgery, medications
 - Biologic variability (30% normal on retest)
 - Low SHBG



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Matsumoto AM, Endocrinol Metab Clin N Am 42:271-286, 2013

ARS-Q3

To avoid over-diagnosis of hypogonadism, patients most likely to benefit from the measurement of both total and *FREE* testosterone are:

- A. Patients taking thiazide diuretics long term
- B. Obese patients
- C. Patients with primarily sexual symptoms
- D. Patients taking anticonvulsants long term



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Testosterone Treatment: Risks and Benefits

- The FDA has issued a statement concerning the safety of testosterone in light of data on T use and cardiovascular disease outcomes
- Contemporary data are mixed, and to date there is no consensus on T safety
- Data regarding T and prostate cancer remains limited
- The T trials have demonstrated benefit to T treatment in men 65+ with hypogonadism

ARS-Q4

Baseline assessment of a man with hypogonadism prior to initiating testosterone therapy should include:

- A. Bone density scan
- B. Complete blood count
- C. PSA for men 35 years and older
- D. Electrocardiogram (ECG)

Testosterone Treatment Options

1. 50-200 mg T enanthate or cypionate IM every 7-14 days
2. 750 mg T undecanoate IM (gluteal) every 10 weeks
3. 2-6 mg T patches applied nightly to back, thigh, or upper arm
4. 5-10 g of a 1% T gel applied daily over a covered area of nongenital skin (wash hands after application)
 - Also 1.62% gel and 2% gel formulations
5. 30 mg buccal T tablet applied to buccal mucosa every 12 h
6. 11mg nasal T gel in each nostril every 8 hours
7. 6-12 T pellets (75mg/pellet) implanted SC (buttock/flank) in office every 3-4 months
8. Oral T undecanoate (not available in U.S.)



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[www.auanet.org/guidelines/testosterone-deficiency-\(2018\)](http://www.auanet.org/guidelines/testosterone-deficiency-(2018))

Alternative Therapies

1. Clomiphene citrate 25-50 mg every 1-2 days
 2. Tamoxifen 20 mg daily
 3. Anastrozole 0.5-1.0 mg every 1-3 days
- None of above are FDA-approved for use in males
4. hCG 500-4000 units SQ/IM 2-3 times per week
 - hCG is FDA-approved for use in males with hypogonadotropic hypogonadism and pediatric patients with cryptorchidism



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[www.auanet.org/guidelines/testosterone-deficiency-\(2018\)](http://www.auanet.org/guidelines/testosterone-deficiency-(2018))

ARS-Q5

Testosterone therapy should be discontinued immediately if:

- A. Hematocrit level is 54% or above
- B. PSA level rises greater than 10% over baseline
- C. Patient experiences chest pain
- D. Testosterone level is 800 ng/dL



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Questions



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