

“Navigating Hormone Changes in the Aging MaleSpotlight on Testosterone”

ZRT Labs Webinar June 30th, 2015 by Dr. Allison Smith

Low levels and high levels of testosterone put men at risk
men with a mid-range testosterone level have the lowest levels of death

What are the symptoms of low testosterone?

- 1) Low libido
- 2) Erectile dysfunction
- 3) Decreased lumbar or femoral bone mass density

What are some less specific symptoms of low testosterone?

- 1) Distressed sleep
- 2) Depressed mood
- 3) Tired and lethargic
- 4) Decreased stamina
- 5) Insulin resistance (type II diabetes and metabolic syndrome)

What sexual symptoms accompany low testosterone?

- 1) Decreased libido
- 2) Erectile dysfunction
- 3) Decrease in orgasm intensity
- 4) Decrease in morning erections

Differential Diagnosis: What other conditions mimic low testosterone?

- 1) Hypothyroidism
- 2) Vascular disease (hypertension, diabetes, cardiovascular artery disease, hyperlipidemia)
- 3) Depression
- 4) Anxiety
- 5) Chronic stress resulting in high cortisol levels: cortisol blocks tissue response to testosterone. Cortisol drives the bus & all the other kids have to sit on the back of the bus.
- 6) Side effects of drugs such as statins or acid blockers
- 7) Prolactinoma

But wait a minutesisn't this all part of aging? Why should we treat low testosterone?

- 1) There is an increased risk of death due to cardiovascular disease and type II diabetes
 Want to read more? Go to Circulation magazine published by the American Heart Association and read this study from November of 2007 which involved 11,606 men. Endogenous Testosterone & Mortality Due to All Causes, Cardiovascular Disease and Cancer in Men. Or visit European Heart Journal's June 2010 article Low Serum Testosterone Levels Are Associated With Increased Risk of Mortality in a Population-based Cohort of Men aged 20 to 79.
- 2) Promotes insulin resistance
- 3) Obesity
- 4) Systemic inflammation (cytokine involvement)
- 5) Erectile involvement
- 6) Increased cancer risk

How can we test for testosterone?

- 1) Saliva
- 2) Dry blood spot
- 3) Blood: This is the standard of care. Insurance will cover and is great to monitor injections, pellets and oral doing. But it grossly underestimates levels with topical or troches.

When to test? Between 8 to 10 AM in the morning. Wait 12 to 24 hours after last topical dose. Injections and pellets can be tested anytime of the day and strive for midpoint from last injection or pellet.

Expected range in saliva: 16 to 30 years old: 72-148 pg/ml
 31 to 50 years old: 58-120 pg/ml
 51 to 70 years old: 44-94 pg/ml
 Greater than 70 years old: 30-77 pg/ml

Starting Treatment:

- 1) Topical: takes 8 hours to get to lymph
 absorption is so variable (6% to 50%) this explains variation in patient's dosing
- 2) Troches: little bit oral/little bit topical. Dose like topical but don't monitor with a saliva test
- 3) Pellets: typical dose is 6 pellets at 200mg each which will release 1.18mg testosterone per pellet per day and should last 5 to 6 months.
- 4) Injection: dose is 100-200mg every 2 to 4 weeks

IMPORTANT CONCEPT TO UNDERSTAND:

If you put someone on too high a dose testosterone expect TACHYPHYLAXIS: diminished tissue response in the presence of suprphysiological levels of the hormone.

Remember....men with high levels have just as much risk as men with low levels. Don't get on an upward dosing curve. Another problem with overdosing is UNWANTED METABOLITES like estradiol and dihydrotestosterone. Not only will the increased estradiol counteract the

testosterone but now the man has to worry about what pathway the estradiol will be metabolized out of his body. Recall that the 4-hydroxy pathway is bad and known to cause cancer.

When you start a man on supplementation with testosterone the patient's endogenous testosterone production will decrease dramatically. He doesn't need to make any testosterone because by his body thinks it has plenty on board. Testosterone supplementation causes infertility and testicular atrophy. When you start a patient on testosterone expect a surge of symptoms @ 3 to 4 weeks when LH production shuts down. This is not tachyphylaxis. Often you will need to adjust the dose up at that time.

Dosing related to the U curve:

"Finding the bottom of the U". Patients with high levels and low levels of testosterone are at risk. Strive for mid-range (288-721ng/dL) because these men have the lowest level of death.

How to minimize metabolites:

A) Aromatase Inhibitors

- 1) Anastrozole: 0.5mg twice a week (especially good for nipple tenderness)
- 2) Chrysin: a 10% or 100mg per day cream (in theory looks good but results vary)
- 3) DIM: di-indoyl-methane: decreases estrogen levels and pushes estradiol down a more favorable OH/CH₃ pathway

B) 5 Alpha Reductase Inhibitors:

- 1) Avodart (dutasteride): targets hair follicles
- 2) Proscar (finasteride): targets prostate 0.5mg twice a week
- 3) Saw Palmetto: 160mg BID
- 4) Nettle Root: 250mg qd

How to monitor treatment:

- 1) Estradiol
- 2) Total testosterone
- 3) Free testosterone index
- 4) Sex Hormone Binding Globulin
- 5) PSA: expect to see a moderate increase
- 6) Hematocrit: first sign levels are too high
- 7) Urine metabolites

Side Effects:

- 1) Testicular atrophy and azoospermia

- 2) Gynecomastia
- 3) Moderate PSA increases
- 4) BPH in some cases
- 5) Hair loss
- 6) Acne, oily skin
- 7) Fluid retention
- 8) Can't sleep well
- 9) Cranky behavior

Non responders or partial responders:

- 1) Check timing...was it that endogenous drop off?
- 2) Receptor down regulation (tachyphylaxis)
- 3) High levels of cortisol will prevent testosterone from binding receptors.

Support Therapy:

- 1) Vitamin D
- 2) Resistance training
- 3) Tribulus: improves sexual parameters
- 4) Maca: improves sexual desire 1500-3000mg QD
- 5) DHEA
- 6) Adaptogens: Ashwagandha can increase testosterone levels
- 7) B complex, zinc and vitamin C