

**HOPE FOR DEPRESSION**  
RESEARCH FOUNDATION

- **Lecture:** *“Testosterone, Erectile Dysfunction and Depression in Adult Men”*
- **Event:** HOPE Scientific Seminar & Luncheon  
Palm Beach - February 20<sup>th</sup>, 2009
- **Speaker:** **Steven Roose, M.D.**  
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## Testosterone, Erectile Dysfunction and Depression in Adult Men

Steven Roose, MD  
Columbia University

### Symptoms of Depression

- Depressed mood, sad or empty, most of the day, nearly every day
- Anhedonia - lack of interest or pleasure
- Sleep - insomnia/hypersomnia
- Appetite or weight change
- Fatigue/loss of energy
- Agitation/retardation
- Diminished ability to think or concentrate
- Low self-esteem or inappropriate guilt
- Recurrent thoughts of death or suicidal ideation



### Faces of Depression



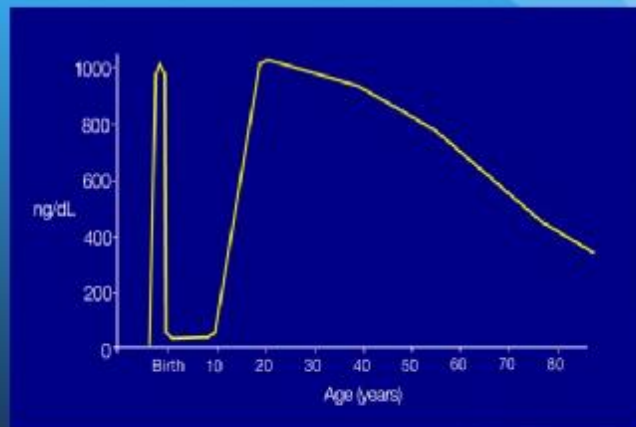
## Faces of Depression



### Symptoms

- Irritable
- School phobia

## Male Testosterone Levels



## Psychiatric Sequelae of Hypogonadism

- Reduced libido
  - Erectile dysfunction (loss of nocturnal and spontaneous erections)
  - Fatigue
  - Irritability
  - Dysphoria
  - Confusion
- Testosterone replacement reverses most hypogonadal symptoms

## Hormonal Deficiency of Age

- Females: menopause
- Males: andropause, or androgen deficiency of the aging male (ADAM)
  - Progressive age-related reduction in androgen level
  - Clinical implications?
    - Metabolic changes
    - Psychiatric symptoms

## ADAM Androgen Deficiency of the Aging Male

### Metabolic signs

- Decreased lean body mass, muscle volume, and strength
- Decreased bone mineral density
- Visceral adiposity
- Reduced body hair and skin alterations
- Impaired hematopoiesis

## ADAM

### Psychiatric symptoms

- Reduced sexual desire and erectile quality, especially nocturnal erections
- Weakness/fatigue
- Dysphoria/anxiety/irritability
- Memory impairment and decreased spatial orientation

## Testosterone and Depression in Middle-aged and Elderly Men

- What is the relationship between testosterone level and depression?
- What are the psychiatric effects of exogenous testosterone replacement in men with hypogonadism and/or depression?

## Testosterone Administration to Hypogonadal Men

- Wang C, et al, 1996
- 51 hypogonadal men
- Age range: 22-60 years
- 6-month testosterone replacement study
- T replacement compared to baseline:
  - Positive mood scales: increase in friendliness, energy level, well-being
  - Negative mood scales: decrease in nervousness, irritability, sadness, anger

## Psychiatric Effects of Testosterone Administration

- **Eugonadal men**
- Physiologic doses
  - Mild increase in sexual arousal and mood
- Supra-physiologic doses
  - Idiosyncratic mood changes (anger, irritability, euphoria)
  - Hypomania (10%-20%)

## Testosterone Replacement in Men With MDD: Conclusion

In clinical trials with depressed, hypogonadal men, antidepressant response to T replacement could not be differentiated from placebo.

## Testosterone Effects in Adult Men

- Systemic
  - Maintenance of secondary sexual characteristics
  - Metabolic actions (anabolic)
- CNS
  - Sexual arousal
  - Emotional activation
  - Cognitive effects
  - Male dominance/submission

## Erectile Dysfunction and Depression

Does treatment of ED also treat the  
Depression?



## Study Population

	Placebo	Sildenafil
Number of subjects	78	74
Mean age	55	56
Age range	25-81	27-76
Mean baseline HDRS-24	17	17

## Depression Study Protocol R-0538: *Sildenafil in Men with Depression*

	ED Nonresponder	ED Responder
Placebo	77%	23%
Sildenafil	17%	83%

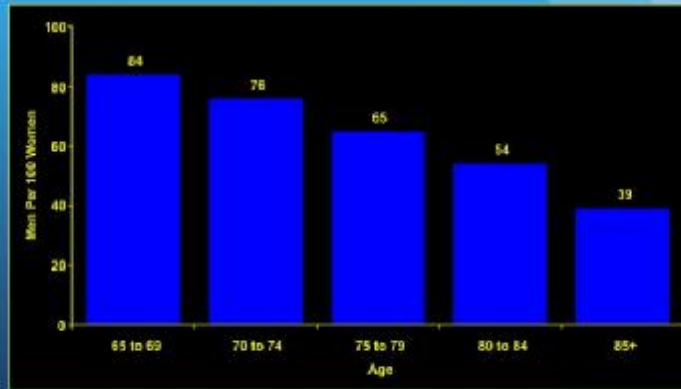
## Depression Scores by Response to Treatment at Week 12: *ITT*



\*P < .0001.

Responders and nonresponders values are least squares means.  
Rosen et al. *Br J Psychiatry*. In Press.

## Number of Men Per 100 Women by Age



Source: Bureau of the Census (1990)