Q34 Testosterone Supplementation

Which *one* of the following statements concerning testosterone supplementation is *false*?

- ❍ 1. It has no consistent, meaningful impact on sexual function.
- ❍ 2. It does not increase prostate events.
- ❍ 3. It increases myocardial infarction risk.
- ❍ 4. Before supplementing, the best initial test is total testosterone from blood drawn in the morning.

Educational Point: Compared to placebo, testosterone may increase lean body mass by about 1.6 kg in older men but has no consistent, meaningful impact on sexual function, strength, fatigue, or cognition. Testosterone does not increase prostate events, myocardial infarction, or stroke, but pulmonary embolism (0.9% vs 0.5%) and atrial fibrillation (3.5% vs 2.4%) may be increased.

Evidence consists of 16 systematic reviews from the past 5 years and main placebo-controlled RCTs. Results were statistically significant unless indicated:

- Sexual function: The most comprehensive systematic review was of men 40 or older with normal or low testosterone levels and sexual dysfunction.
  - No difference in sexual function scale score (range 6 to 30, higher score shows normal function): The 6 highest-quality RCTs (N=2016) reported a mean difference of 2.4 at 12 months or less, which is likely not clinically different.
  - Other studies had similar results.
- Strength: The most comprehensive review was of 11 RCTs of 814 men aged 66 to 77 with normal or low testosterone levels. Over 3 to 12 months, the highest quality RCTs reported the following:
  - Lean body mass: 1.6 kg higher with testosterone. Other reviews had similar results.
  - No difference in grip strength and physical performance test results. Leg strength was inconsistent.
- Fatigue: There was 1 systematic review with limitations. Largest RCT was of 464 participants 65 or older with low testosterone levels and self-reported "low vitality":
  - Clinical improvement on fatigue score: No difference.
- Cognition: There were 3 systematic reviews with limited reporting. The 2 largest RCTs reported no difference.
- Quality of life: The best systematic review was of 7 RCTs (N=1043). Most participants had a testosterone level less than 12 nmol/L. There was no clinical difference in symptom score. Other studies had similar results.
- Harms: The largest RCT (N=5204) was on cardiovascular (CV) effects of 1.62% testosterone gel, 55% with CV disease or at high risk. Baseline level was 8 nmol/L. At 33 months:
  - **All-cause mortality, major CV events, prostate cancer, invasive prostatic procedures: No difference.**
  - Atrial fibrillation: 3.5% versus 2.4% (placebo), NNH=93.
  - Pulmonary embolism: 0.9% versus 0.5% (placebo), no statistics provided.
  - Systematic reviews: Similar results.

Testosterone level is considered low when less than 10 nmol/L. **The best initial test is total testosterone from blood drawn between 7:00 am and 11:00 am.** Guidelines