Testim® (testosterone gel): Will you experience the difference?

The Bottom Line
Testim, a new testosterone gel, is an alternative to AndroGel® for the treatment of hypogonadism in adult males. While an advantage over AndroGel has not been demonstrated for Testim in well-designed clinical trials, both testosterone gel formulations are clearly better tolerated than transdermal testosterone patches.3,4

Key Points
- Testim achieves consistent therapeutic serum testosterone concentrations
- Studies comparing Testim and AndroGel do not clearly identify one as superior to the other
- Men receiving testosterone transdermal patches experienced similar improvement in sexual function but significantly more local skin irritations than those using Testim
- The cost of Testim is similar to AndroGel and testosterone transdermal patches

The Pitch
Testim is a clear gel formulation of 1% testosterone indicated for replacement therapy in adult males with deficiency of endogenous testosterone. When applied daily to the upper arms and shoulders, the manufacturer purports that Testim restores and maintains testosterone levels, improves sexual function (desire, motivation, and performance), increases lean body mass, decreases fat mass, and increases bone mineral density (www.testim.com).

Context
Testosterone replacement therapy is indicated for the treatment of male primary testicular failure or hypogonadotropic hypogonadism. The testosterone preparations currently available in the United States include intramuscular injections, a transdermal patch, transdermal gels, a subcutaneous pellet, and a buccal tablet. These products vary in terms of serum concentrations, adverse effects, ease of administration, and patient preference.

Long-acting parenteral preparations require frequent intramuscular injections and, because of fluctuations in serum concentrations, may cause return of symptoms near the end of the treatment interval. Buccal tablets must be administered twice daily and may cause gum irritation. The dose of pellets is difficult to adjust because they are administered subcutaneously every 3 to 6 months. The transdermal patch provides consistent delivery of testosterone, but significant skin irritations occur.3,4 Topical gels likewise produce consistent therapeutic levels when applied to large areas of the skin, but may be transferred from 1 person to another for up to 12 hours after application.

Testim should be applied once daily, in the morning, to the shoulders or upper arms; application to genitals and abdomen must be avoided. The application site should be covered with clothing because testosterone transfer can occur in direct skin-to-skin contact. Hand washing after application is advised. Morning serum testosterone levels should be measured 14 days after initiation of therapy to ensure proper levels are achieved.5 Hemoglobin and hematocrit should be checked at baseline, 3 months, and then annually. Other periodic monitoring should include liver function tests, prostate-specific antigen, and a lipid profile.

The Data

Efficacy
The efficacy of Testim was evaluated in 5 controlled clinical trials of hypogonadal men.1-4,6 In a randomized, multicenter, placebo-controlled study of 406 men, 164 (80%) receiving Testim 100 mg daily and 10 (10%) participants taking placebo achieved normal proper levels by day 90 (P<.05).4 In addition, mean changes from baseline in sexual function scores were significantly improved over placebo in patients receiving Testim with respect to spontaneous erections, desire, and sexual performance.4 At 90 days the average serum testosterone concentrations were also significantly higher among patients receiving Testim 100 mg/d compared with others in the study using a testosterone transdermal patch (17.1 vs 11.9 nmol/L, P<.001); however, no difference in sexual function was seen between these 2 groups.4

Two trials evaluated sexual outcomes with Testim compared with another testosterone gel formu-
lution. Testim showed greater improvement in 4 of 5 sexual function domains among hypogonadal men. However, both were open-label studies and the results should be interpreted with caution because of significant methodologic shortcomings.\(^1,2\)

No significant benefit was seen in lean body mass, fat percent, or fat mass in 1 of 2 trials evaluating differences in body composition among patients receiving Testim versus a testosterone transdermal patch.\(^3,4\) The second trial demonstrated a significant improvement in lean body mass by 1.7 kg and percentage of body fat by 1.2% with Testim compared with placebo (\(P<.05\) and \(P<.01\), respectively) and the testosterone patch (\(P<.05\) for both comparisons).\(^4\) Despite manufacturer claims of improved bone mineral density with Testim, benefit has not been demonstrated among hypogonadal men in any of the controlled clinical trials.

Testim demonstrated no benefit over placebo in hypogonadal men with end-stage renal disease with respect to human erythropoietin dose, bone mineral density, lean body mass, fat mass, serum cholesterol values, or sexual function.\(^6\)

**Tolerability**

No direct comparison trials between Testim and AndroGel with respect to adverse effects have been published. However, 2 trials with a total of 614 patients comparing Testim with the testosterone transdermal patch evaluated differences in treatment-related adverse events. When compared with Testim, the testosterone patch resulted in significantly more adverse effects, most commonly application site reactions including erythema, pruritus, rash, and blisters (63% vs 35%, \(P<.001\) in both studies).\(^3,4\)

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