limited and the clinical value, especially in men with functional hypogonadism (FH) is debated. A long-term, real-world registry study comprising groups of patients with hypogonadism of various etiologies provides a suitable and novel approach to this clinical issue. **Methods:** A registry spanning 9 years comprising 650 patients with hypogonadism included 188 patients with FH (mean age 42.3 ±11.3 years) and 462 men with classical hypogonadism (CH). Of these, 266 men had primary hypogonadism (PH, mean age 34.0±11.7 years) and 196 secondary hypogonadism (SH, mean age 31.9±12.0 years). All men uniformly received intramuscular T undecanoate (1000 mg). Effects of TTh on anthropometric parameters, as well as metabolic and safety parameters were compared. **Results:** The registry contained metabolic and safety parameters in individual duration of TTh spanning 1 to 9 years. Serum T concentrations increased from 6.6±2.4 nmol/L to 19.3±2.9 nmol/L in all patients (duration-of-treatment-dependent averages, mixed linear model for repeated measurements with the fixed variable "time x visit interaction": $p<0.001$). In both categories of hypogonadism, TTh was associated with significant weight loss and decrease in waist circumference (WC, both $p<0.001$). Cox regression and Kaplan-Meier models revealed differences of inter-individual check-points: men with FH were more likely to lose >10% weight and >5% of WC than men with CH (hazard ratio 1.3 [1.1-1.4], p=0.008 and hazard ratio 1.4 [1.3-1.5], p=0.001). There was no difference between groups for the overall marked increase in hematocrit. Changes in PSA levels were more likely to occur in FH (hazard ratio 1.3 [1.1-1.6], p=0.003). During TTh, patients with FH exhibited significantly more pronounced changes of favourable nature in metabolic parameters than patients with CH (total cholesterol, triglycerides, LDL- and HDL-cholesterol and fasting glucose). The same applied to scores of AMS and IIEF-EF questionnaires. Effects on most parameters, especially hematocrit, were significantly modulated by age and baseline values for weight, WC und T. **Conclusions:** Findings regarding effects and safety of TTh in different groups of hypogonadal men are provided. Effects on factors associated with cardiovascular health are modulated by diagnosis and age. Patients with FH seem to benefit to a larger extent from TTh, most likely attributable to their more pronounced risk factor profile at baseline.

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Steroid Hormones, Nuclear Receptors and Coregulators

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Testosterone Therapy in Men with Classical vs Functional Hypogonadism: Results from a Controlled 9-year, Real-world Registry Study

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Background and Significance: Long-term data on Testosterone therapy (TTh) in hypogonadal men are