

## Economic Burden of Growth Hormone Deficiency in a U.S. Adult Population

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**Background:** Growth hormone deficiency (GHD) is a rare disorder currently treated in adults with daily injections of somatropin. Adults with GHD have a diminished quality of life, central adiposity, which may put them at risk for metabolic syndrome and cardiovascular disease, and decreased bone mineral density. Treatment of adults with GHD is associated with improvement in metabolic impairment and quality of life. Poor adherence to or lack of treatment with somatropin is associated with reduced or lack of efficacy and increased costs. This study analyzed healthcare costs and daily somatropin use among adults with GHD who had Medicaid or commercial health insurance in the U.S.

**Methods:** Adult patients with a GHD diagnosis between January 1, 2008, and December 31, 2017 were identified in the IBM Market scan Medicaid and Commercial Databases (index date = first diagnosis). Patients with GHD were directly matched (1:3) to controls without GHD (or other short stature-related disorder) on age, gender, plan type, region, and race (Medicaid only). Baseline comorbidities and medications were measured during the 12 months pre-index. All-cause and GHD-related healthcare costs and somatropin use were measured during the variable follow-up period.

**Results:** The 2,579 Medicaid and 24,373 commercial patients with GHD who met the study inclusion criteria were matched to 7,728 Medicaid and 73,119 commercial controls. Little variation was observed between the demographic makeup of adult patients with and without GHD, demonstrating effective matching. Participants were evenly split between male and female. Median age at index was 37 years for Medicaid patients and 48 years for commercial patients. Mean follow-up time was 41 and 31 months for Medicaid patients and controls, and 35 and 37 months for commercial patients and controls, respectively. Compared to controls, GHD patients were disproportionately affected by comorbidities, including endocrine conditions (>68% in GHD cases vs. ≤10% in controls), metabolic conditions (>93% in GHD cases vs. ≤39% in controls), hepatic and renal function conditions (18-23% in GHD cases vs. <10% in controls), and cardiovascular disease (41-53% in GHD cases vs. <29% in controls), and were disproportionately treated with concomitant medications. Mean annual all-cause healthcare costs were 4.6 times greater (\$42,309 vs. \$9,146) for Medicaid GHD patients than controls and 4.1 times greater (\$30,111 vs. \$7,376) for commercial GHD patients than controls. For Medicaid GHD patients, inpatient costs were a primary driver (\$22,385 vs. \$3,494 for controls), while outpatient costs made up the largest proportion for commercial patients (\$13,083 vs. \$4,057 for controls). Few patients were treated with somatropin therapy in both Medicaid (5.8%) and commercial (9.5%) GHD cohorts.

**Conclusion:** Adult patients with GHD experience a substantial comorbidity and economic burden compared to non-GHD controls. Adult GHD remains primarily untreated and presents a significant healthcare burden.

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