

Committee to Evaluate Drugs (CED)

Recommendations and Reasons

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Somatropin

Product: somatropin (Genotropin® GoQuick®; Genotropin® MiniQuick®)

Class of Drugs: growth hormone replacement

Reason for Use: adult and pediatric growth hormone deficiency; Turner syndrome

Manufacturer: Pfizer Canada Inc.

Date of Review: February 5, 2014

CED Recommendation

The CED recommended that somatropin (Genotropin® GoQuick®; Genotropin® MiniQuick®) be funded for adult and pediatric growth hormone deficiency and Turner syndrome according to specific criteria. Genotropin® appears to be similar in effectiveness as other growth hormone products and it is generally less expensive than funded alternatives.

Executive Officer Decision*

Based on the CED's recommendation and an agreement with the manufacturer, the Executive Officer decided to fund somatropin (Genotropin® GoQuick®; Genotropin® MiniQuick®) through the Ontario Drug Benefit's (ODB) Exceptional Access Program and through the Special Drugs Program according to specific criteria.

Funding Status*

Funded through the ODB's Exceptional Access Program and through the Special Drugs Program according to specific criteria.

** This information is current as of the posting date of the document. For the most up-to-date information on Executive Officer decision and funding status, see: www.health.gov.on.ca/en/pro/programs/drugs/status_single_source_subm.aspx.*

Highlights of Recommendation:

- Genotropin® (somatropin) is a human growth hormone replacement product manufactured through recombinant DNA technology. Genotropin® is one of several brands of somatropin available in Canada.
- **For adult growth hormone deficiency**, six placebo randomized controlled trials found that Genotropin® decreased body fat, and four of those studies found that Genotropin® increased lean body mass. Additionally, eight systematic reviews of the clinical data showed that somatropin (various brands) improved exercise capacity compared with placebo or no treatment. Inconsistent results were reported for other treatment benefits, including patients' quality of life, muscle strength, lipid levels, bone mineral density, and body composition.
- **For pediatric growth hormone deficiency**, two randomized controlled trials suggested similar effectiveness between Genotropin® and other somatropin products on measures related to height.
- **For Turner syndrome**, two systematic reviews demonstrated that somatropin (various brands) is effective for the treatment of short stature.
- For all three indications, the overall safety of Genotropin® was considered acceptable.
- The manufacturer submitted a confidential price for Genotropin®. Genotropin® is generally less expensive than other funded somatropin products.

Background:

Growth hormone is produced by the pituitary gland and plays a role in achieving normal growth in children, and also plays a role in the regulation of protein, lipid and carbohydrate metabolism during both childhood and adult life.

Growth hormone deficiency in children may lead to short stature and delayed puberty. Adults with growth hormone deficiency may experience a wide range of symptoms, including decreased lean body and muscle mass, increased fat mass, reduced bone mineral density, abnormal cholesterol levels and psychiatric symptoms.

Turner syndrome is a genetic condition caused by a missing or incomplete X chromosome in females. One of the features of Turner syndrome is short stature, and growth hormone replacement is a standard treatment in childhood.

Detailed Discussions:

- For this evaluation, the CED considered:
 - Findings from the Common Drug Review (CDR) and the recommendation of the Canadian Drug Expert Committee (CDEC);
 - Information in the manufacturer's submission;
 - One patient submission.

- **For adult growth hormone deficiency (GHD)**, the CED considered six placebo randomized controlled trials (RCTs) evaluating the efficacy and safety of Genotropin® in adult patients with GHD. Statistically significant decreases in body fat were reported in all six RCTs favouring Genotropin® compared to placebo. Statistically significant increases in lean body mass were reported in four RCTs favouring Genotropin® compared to placebo. No differences in health-related quality of life (QOL), lipid levels, or bone mineral density were observed across the RCTs.
- Adverse events (AEs) were more frequently reported in the Genotropin® groups compared with the placebo groups, including general disorders, peripheral swelling, and musculoskeletal disorders. Serious AEs were relatively uncommon and there were no withdrawals due to AEs reported for any of the six RCTs.
- The CED also reviewed eight systematic reviews comparing somatropin with placebo or no treatment in adults with GHD. Conflicting results were reported for changes in health-related QOL, muscle strength, lipid profile, bone mineral density, and body composition. Statistically significant improvements in exercise capacity were reported for patients treated with somatropin compared to placebo-treated patients.
- **For pediatric GHD**, the CED evaluated two RCTs of Genotropin® and various other somatropin products. The primary endpoints in both studies were height-related measures. The results demonstrated that there were minimal differences in efficacy between Genotropin® and the comparators.
- **For Turner syndrome (TS)**, the CED reviewed two open-label RCTs evaluating the safety and efficacy of Genotropin® given alone or with hormonal therapy, as well as two systematic reviews comparing somatropin with placebo or no treatment in girls with TS. The systematic reviews demonstrated that treatment with somatropin resulted in more rapid growth and greater gains in height compared with no treatment. There was insufficient evidence to assess whether treatment with somatropin improved patients' QOL compared with no treatment. Safety data were sparsely reported but no serious AEs were observed during somatropin treatment in the studies.
- The manufacturer submitted a confidential price for Genotropin®. The cost of Genotropin® varies by indication; it is generally less expensive than funded alternatives.
- The CED reviewed one patient submission. The submission highlighted the physical and mental health problems associated with adult GHD and included testimonials on the benefits of growth hormone treatment.
- Overall, while there are few direct comparison studies, available evidence suggests that Genotropin® is similar in efficacy as other somatropin products in the treatment of adult GHD, pediatric GHD and TS. There are limited clinical studies assessing the effect of somatropin on clinically important outcomes, such as health-related quality of life. The cost of Genotropin® compares favourably to other funded somatropin products.

Committee to Evaluate Drugs (CED)

The Committee to Evaluate Drugs (CED) is comprised of practicing physicians, pharmacists, health economists, and patient representatives. In conducting its review, the CED considers data contained in the drug manufacturer's submission, input provided by patient groups, findings from the national Common Drug Review and the pan-Canadian Oncology Drug Review, and other scientific information as necessary.

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