Canadian Agency for Drugs and Technologies in Health

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PROJECT IN BRIEF

COMPUS

COMPUS Diabetes Project — Guiding the Optimal Use of Insulin Analogues

Condition

Diabetes mellitus is a chronic disease characterized by the body's inability to produce enough insulin or to use it properly.

- Type 1 diabetes results when little or no insulin is made by the body.
- Type 2 diabetes results when the body makes insulin, but is unable to use it effectively.

Drug

- Insulin is a hormone that regulates the amount of glucose (sugar) found in the blood.
- Insulin analogues differ slightly in their chemical makeup from human insulins.
- Both rapid-acting (mealtime or bolus) and long-acting (background or basal) insulin analogues are available. They are used to treat patients with type 1, type 2, and gestational diabetes.

Issue

Within diabetes mellitus management, optimal use of the insulin analogues was identified by the COMPUS Advisory Committee as a priority topic. Given the high prevalence and rising incidence of diabetes in Canada, the optimal prescribing and use of insulin and insulin analogues has the potential to positively impact health outcomes for a large number of patients. Although the insulin analogues may have certain clinical advantages as compared to conventional insulins, acquisition costs of insulin analogues (i.e., insulin aspart, insulin lispro, insulin detemir, and insulin glargine) are greater than those for conventional insulin products (e.g., insulin neutral protamine Hagedorn [NPH] and regular human insulin). Given the increasing number of people diagnosed with diabetes mellitus each year, health care providers, consumers, and policy makers require evidence-based information on the optimal use of these agents.

Methods

Research efforts for the comparison of insulin analogues with conventional insulins focused on the following:

- clinical evaluation (systematic reviews and meta-analyses)
- economic evaluation (cost-effectiveness, cost-utility, and cost-consequence analyses)
- current utilization analysis
- current practice analysis
- identification of practice and knowledge gaps
- barriers to optimal use.

The clinical and economic evaluations were used by the COMPUS Expert Review Committee (CERC) to generate recommendations for the optimal prescribing and use of insulin analogues.

Results

- A total of 16 detailed optimal therapy recommendations were produced.
- Three gaps in knowledge and practice were revealed through comparing information from the Optimal Therapy Reports: *Current Utilization of Insulin Products in Canada,* and *Current Practice Analysis* with the *Optimal Therapy Recommendations for the Prescribing and Use of Insulin Analogues*.
- Key messages were developed based on the gaps and recommendations.
- COMPUS intervention tools will encourage the evidence-based optimal prescribing and use of insulin analogues.

Key Messages

Bolus insulin therapy:

- In patients with type 1 diabetes, either regular human insulin or rapid-acting insulin analogues can be considered as first-line therapy (except in adolescent patients).
- In adolescent patients with type 1 diabetes, rapid-acting insulin analogues may be considered as first-line therapy.
- In patients with type 2 diabetes requiring bolus insulin, regular human insulin may be considered first. Although the evidence is limited and inconsistent, patients who are experiencing significant hypoglycemia while taking human insulin may benefit from rapid-acting insulin analogues.

Basal insulin therapy:

- In patients with type 1 or type 2 diabetes requiring basal insulin, insulin NPH should be considered first. Although the evidence is limited and inconsistent, patients who are experiencing significant hypoglycemia while taking insulin NPH may benefit from long-acting insulin analogues.

This summary is based on the CADTH Optimal Therapy Reports on Insulin Analogues.

For complete Optimal Therapy Reports and Intervention Tools: www.cadth.ca

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