

IN BRIEF A Summary of the Evidence

Basal-Bolus Versus Sliding-Scale Insulin Therapy in the Acute Care Hospital Setting: A Review

Key Messages

- Basal-bolus insulin therapy is associated with lower blood glucose levels and a lower risk of hyperglycemia compared with sliding-scale insulin therapy.
- There appears to be no significant difference in the risk of adverse events associated with basal-bolus insulin therapy compared with sliding-scale insulin therapy.
- How the two therapies compare with respect to length of hospitalization and risk of hypoglycemia is unclear.
- No information on the cost-effectiveness of basal-bolus compared with sliding-scale insulin therapy was found.
- Larger, higher-quality studies with longer follow-up are needed.

Context

When patients are hospitalized, their blood glucose control may be suboptimal because oral medications are often stopped on admission. High blood sugar levels, or hyperglycemia, are common among hospitalized patients and are linked to several complications, including increased morbidity, mortality, and hospital stay. In addition, low blood sugar levels, or hypoglycemia, are serious risks associated with insulin therapy and can potentially lead to arrhythmias and other cardiac events. Hospital management of diabetes focuses on the prevention of short-term complications of diabetes, such as the symptoms of hyperglycemia and hypoglycemia, as well as prevention of infections and surgical complications.

Technology

Insulin is commonly recommended for controlling blood glucose during a hospital stay. Two methods of insulin administration in the hospital setting are currently in use: sliding-scale insulin therapy and basal-bolus insulin therapy. Sliding-scale insulin therapy consists of giving patients regular or rapid-acting insulin five to 30 minutes before meals, with doses based on before-meal measurements of capillary blood glucose. In basal-bolus insulin therapy, patients are given a basal (long-acting) insulin once or twice daily, a nutritional (short- or rapid-acting) insulin before meals, and a correctional (short- or rapid-acting) insulin for any unexpected before-meal hyperglycemia. Hyperglycemia in hospitalized patients is traditionally controlled using sliding-scale insulin therapy. However, basal-bolus insulin therapy more closely imitates the body's normal release of insulin, and is the recommended method of insulin administration today.

Issue

Better glucose control with insulin for both type 1 and type 2 diabetes may improve clinical outcomes and prevent complications in hospitals. A review of the clinical effectiveness and cost-effectiveness of basal-bolus insulin therapy compared with sliding-scale insulin therapy for adult patients with type 1 or type 2 diabetes will help to inform decisions regarding insulin therapy in the acute care hospital setting.

Methods

A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Results

The literature search identified 474 citations, 19 of which were deemed potentially relevant. Of these articles, four met the criteria for inclusion in this review — one systematic review and three primary studies.

Read more about CADTH and its review of basal-bolus versus sliding-scale insulin therapy in the acute care hospital setting at:



cadth.ca/basal-bolus-versus-sliding-scale-insulin-therapy-acute-care-hospital-setting-review-comparative-0

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