TITLE: Glucose Preparations for the Treatment of Mild to Moderate Hypoglycemia in Diabetic Patients: Clinical Effectiveness and Guidelines

DATE: 15 April 2011

RESEARCH QUESTIONS

1. What is the comparative effectiveness of various glucose preparations for the treatment of mild to moderate hypoglycemia in patients with diabetes?

2. What is the effectiveness of various glucose preparations for the treatment of mild to moderate hypoglycemia in patients with diabetes?

3. What are the evidence-based guidelines for the use of glucose preparations for the treatment of mild to moderate hypoglycemia in patients with diabetes?

KEY MESSAGE

Evidence from randomized trials suggests that glucose tablets, orange juice, sugar mints and sucrose are of comparable effectiveness for the treatment of hypoglycemia in pediatric patients with diabetes. Mild to moderate hypoglycemia can be treated by oral glucose or sucrose according to the Canadian practice guidelines.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2011, Issue 3), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2006 and April 4, 2011. Internet links were provided, where available.
RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials (RCTs) and non-randomized studies.

Two RCTs and one evidence-based guideline regarding regarding the use of glucose preparations for the treatment of mild to moderate hypoglycemia in patients with diabetes were identified. No relevant health technology assessments, systematic reviews, meta-analyses, or non-randomized studies were identified.

OVERALL SUMMARY OF FINDINGS

One RCT was identified comparing the effectiveness of four oral treatments (glucose tablets, jellybeans, orange juice, and sugar mints) for hypoglycemia in children with type 1 diabetes.\(^1\) Jellybeans are less effective for the treatment of hypoglycemia than the other three treatment options. The authors concluded glucose tablets, mints, and orange juice were of similar efficacy. A second RCT compared the effectiveness of three oral treatments (glucose tablets, sucrose [Skittles], and fructose [Fruit to Go]) for hypoglycaemia in children with type 1 diabetes.\(^2\) The authors reported no significant difference between the effectiveness of glucose tablets and sucrose. However, the treatment effectiveness for fructose was significantly lower than sucrose.\(^2\) The Canadian Diabetes Association Clinical Practice Guidelines recommended that an oral ingestion of 15 grams of carbohydrate, preferably as glucose or sucrose tablets or solution, should be used for the treatment of mild to moderate hypoglycaemia in patients with diabetes.\(^3\) The guidelines indicated these forms of glucose are preferable to orange juice and glucose gels.

There were no significant differences in the comparative effectiveness of glucose tablets, sucrose, sugar mints and orange juice for the treatment of hypoglycaemia in children with type 1 diabetes,\(^1,2\) although evidence from RCT studies in adult diabetic patients are absent. According to the Canadian guidelines,\(^3\) mild to moderate hypoglycemia should be treated with oral glucose or sucrose.
REFERENCES SUMMARIZED

Health technology assessments
No literature identified.

Systematic reviews and meta-analyses
No literature identified.

Randomized controlled trials


Non-randomized studies
No literature identified.

Guidelines and recommendations

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APPENDIX – FURTHER INFORMATION:

Additional references