

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Intravenous Dextrose Drip versus Push for Adults Experiencing Hypoglycemia: Comparative Clinical Effectiveness

Service Line:	Rapid Response Service
Version:	1.0
Publication Date:	May 3, 2019
Report Length:	5 Pages

Authors: Calvin Young, Aleksandra Grobelna

Cite As: Intravenous dextrose drip versus push for adults experiencing hypoglycemia: comparative clinical effectiveness. Ottawa: CADTH; 2019 May. (CADTH rapid response report: summary of abstracts).

Disclaimer: The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners' own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein do not necessarily reflect the views of Health Canada, Canada's provincial or territorial governments, other CADTH funders, or any third-party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user's own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian *Copyright Act* and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

Research Question

What is the comparative clinical effectiveness and safety of dextrose 10% intravenous drip versus dextrose 50% intravenous push for adults experiencing acute hypoglycemia?

Key Findings

No relevant literature was identified regarding the comparative clinical effectiveness and safety of dextrose 10% intravenous drip versus dextrose 50% intravenous push for adults experiencing acute hypoglycemia.

Methods

A limited literature search was conducted on key resources including PubMed, the Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2014 and April 22, 2019. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Adults experiencing acute hypoglycemia
Intervention	Dextrose 10% - intravenous drip
Comparator	Dextrose 50% (D50) - intravenous push
Outcomes	Clinical effectiveness in terms of time to return blood glucose levels to normal range For Dextrose D50: Safety in terms of rebound hypoglycemia, thrombophlebitis, extravasation, IV line patency
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies

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 and non-randomized studies.

No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, or non-randomized studies were identified.

References of potential interest are provided in the appendix.

Overall Summary of Findings

No relevant literature was identified regarding the comparative clinical effectiveness and safety of dextrose 10% intravenous drip versus dextrose 50% intravenous push for adults experiencing acute hypoglycemia; therefore, no summary can be provided.

Two references of potential interest¹⁻² provided in the appendix examined the feasibility, safety, and efficacy of a hypoglycemia treatment protocol that used intravenous 10% dextrose solution due to occasional shortages and higher cost of 50% dextrose. Although these studies were not included in the main text of the review due to their non-comparative nature, the findings of these publications may be of interest to those who are seeking evidence regarding the clinical effectiveness of dextrose treatment strategies for adults experiencing acute hypoglycemia.

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Appendix — Further Information

Non-Randomized Studies – No Comparator

1. Hern HG, Kiefer M, Louie D, Barger J, Alter HJ. D10 in the Treatment of Prehospital Hypoglycemia: A 24 Month Observational Cohort Study. *Prehospital emergency care : official journal of the National Association of EMS Physicians and the National Association of State EMS Directors*. 2017 Jan-Feb;21(1):63-67.
[PubMed: PM27918858](#)
2. Kiefer MV, Gene Hern H, Alter HJ, Barger JB. Dextrose 10% in the treatment of out-of-hospital hypoglycemia. *Prehospital and disaster medicine*. 2014 Apr;29(2):190-194.
[PubMed: PM24735872](#)

Review Articles

3. Villani M, de Courten B, Zoungas S. Emergency treatment of hypoglycaemia: a guideline and evidence review. *Diabetic medicine: a journal of the British Diabetic Association*. 2017 Sep;34(9):1205-1211.
[PubMed: PM28477413](#)