

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Diatrizoate Meglumine and Diatrizoate Sodium Solution for Treatment of Small Bowel Obstruction: Clinical Effectiveness

Service Line: Rapid Response Service
Version: 1.0
Publication Date: July 16, 2019
Report Length: 8 Pages

Authors: Deba Hafizi, Hannah Loshak

Cite As: Diatrizoate meglumine and diatrizoate sodium solution for treatment of small bowel obstruction: clinical effectiveness. Ottawa: CADTH; 2019 Jul. (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.

Questions or requests for information about this report can be directed to requests@cadth.ca

Research Questions

1. What is the clinical effectiveness of diatrizoate meglumine and diatrizoate sodium solution for treatment of small bowel obstruction?
2. What are the evidence-based guidelines regarding the use of diatrizoate meglumine and diatrizoate sodium solution for the treatment of small bowel obstruction?

Key Findings

One systematic review and two randomized controlled trials were identified regarding the clinical effectiveness of diatrizoate meglumine and diatrizoate sodium solution for treatment of small bowel obstruction. No relevant evidence-based guidelines were identified regarding the use of diatrizoate meglumine and diatrizoate sodium solution for the treatment of small bowel obstruction.

Methods

A limited literature search was conducted by an information specialist on key resources including Medline via OVID, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were Gastrografin (diatrizoate meglumine and diatrizoate sodium solution) and small bowel obstructions. 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 July 5, 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	Q1 & Q2: Adult patients with small bowel obstruction admitted to a surgical ward.
Intervention	Q1 & Q2: Diatrizoate Meglumine and Diatrizoate Sodium Solution (e.g., Gastrografin)
Comparator	Q1: Any comparator (e.g., nothing by mouth, clear fluids only, nasogastric tube, watchful waiting) Q2: Not applicable
Outcomes	Q1: Clinical effectiveness (e.g., resolved obstruction, harms) Q2: Evidence-based guidelines
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, and evidence-based guidelines

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 evidence-based guidelines.

One systematic review and two randomized controlled trials were identified regarding the clinical effectiveness of diatrizoate meglumine and diatrizoate sodium solution for treatment of small bowel obstruction. No relevant health technology assessments or evidence-based guidelines were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

One systematic review¹ and two randomized controlled trials^{2,3} were identified regarding the clinical effectiveness of diatrizoate meglumine and diatrizoate sodium solution (DM and DS) for treatment of small bowel obstruction (SBO). The authors of the systematic review found that patients with SBO who received DM and DS solution had significantly reduced need for surgery compared to those who did not.¹ The authors of one randomized controlled trial found that DM and DS solution was more effective than enemas in the treatment of colon obstruction.² However, the authors of a different study found no benefit in administering DM and DS solution for adhesive SBO and found no significant difference in surgical intervention, bowel resection, in-hospital mortality, length of stay, or time to feed between the intervention and control group.³

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

- Ishizuka M, Shibusawa N, Takagi K, et al. Gastrografin reduces the need for additional surgery in postoperative small bowel obstruction patients without long tube insertion: a meta-analysis. *Ann Gastroenterol Surg.* 2019;3(2):187-194.
[PubMed: PM30923788](#)

Randomized Controlled Trials

- Gu L, Ding C, Tian H, et al. Use of Gastrografin in the management of faecal impaction in patients with severe chronic constipation: a randomized clinical trial. *ANZ J Surg.* 2019;89(3):239-243.
[PubMed: PM30294848](#)

3. Scotté M, Mauvais F, Bubenheim M, et al. Use of water-soluble contrast medium (Gastrograffin) does not decrease the need for operative intervention nor the duration of hospital stay in uncomplicated acute adhesive small bowel obstruction? A multicenter, randomized, clinical trial (Adhesive Small Bowel Obstruction Study) and systematic review. *Surgery*. 2017;161(5):1315-1325.
[PubMed: PM28087066](#)

Guidelines and Recommendations

No literature identified.

Appendix — Further Information

Previous CADTH Reports

4. Bowel preparation for colorectal procedures: a review of clinical effectiveness, cost-effectiveness and guidelines. (*CADTH Rapid response report: summary with critical appraisal*). Ottawa (ON): CADTH; 2018: <https://cadth.ca/bowel-preparation-colorectal-procedures-review-clinical-effectiveness-cost-effectiveness-and-0>. Accessed 2019 Jul 12.
5. Interventions for the diagnosis, treatment, or management of conditions of the small bowel: guidelines. (*CADTH Rapid response report: summary of abstracts*). Ottawa (ON): CADTH; 2017: <https://cadth.ca/interventions-diagnosis-treatment-or-management-conditions-small-bowel-guidelines-0>. Accessed 2019 Jul 12.

Systematic Review

Alternative Population

6. Lin LH, Lee CY, Hung MH, Chen DF. Conservative treatment of adhesive small bowel obstruction in children: a systematic review. *BMJ Open*. 2014;4(9):e005789.
[PubMed: PM25223569](#)

Alternative Outcome – Diagnostic Accuracy

7. Rami Reddy SR, Cappell MS. A systematic review of the clinical presentation, diagnosis, and treatment of small bowel obstruction. *Curr Gastroenterol Rep*. 2017;19(6):28.
[PubMed: PM28439845](#)

Randomized Controlled Trials – Alternative Population

8. Milne TGE, Vather R, O'Grady G, Miquel J, Biondo S, Bissett I. Gastrografin may reduce time to oral diet in prolonged post-operative ileus: a pooled analysis of two randomized trials. *ANZ J Surg*. 2018;06:06. [epub ahead of print]
[PubMed: PM29510463](#)
9. Biondo S, Miquel J, Espin-Basany E, et al. A double-blinded randomized clinical study on the therapeutic effect of Gastrografin in prolonged postoperative ileus after elective colorectal surgery. *World J Surg*. 2016;40(1):206-214.
[PubMed: PM26446450](#)
10. Hamid R, Bhat N, Baba A, et al. Use of Gastrografin in the management of worm-induced small bowel obstruction in children. *Pediatr Surg Int*. 2015;31(12):1171-1176.
[PubMed: PM26428224](#)

Non-Randomized Studies

11. Heng S, Hardy J, Good P. A retrospective audit on usage of diatrizoate meglumine (Gastrografin) for intestinal obstruction or constipation in patients with advanced neoplasms. *Palliat Med.* 2018;32(1):294-298.
[PubMed: PM28805119](#)
12. Zielinski MD, Haddad NN, Cullinane DC, et al. Multi-institutional, prospective, observational study comparing the Gastrografin challenge versus standard treatment in adhesive small bowel obstruction. *J Trauma Acute Care Surg.* 2017;83(1):47-54.
[PubMed: PM28422909](#)
13. Baghdadi YM, Choudhry AJ, Goussous N, Khasawneh MA, Polites SF, Zielinski MD. Long-term outcomes of Gastrografin in small bowel obstruction. *J Surg Res.* 2016;202(1):43-48.
[PubMed: PM27083946](#)
14. Khasawneh MA, Ugarte ML, Srivastan B, Dozois EJ, Bannon MP, Zielinski MD. Role of Gastrografin challenge in early postoperative small bowel obstruction. *J Gastrointest Surg.* 2014;18(2):363-368.
[PubMed: PM24165871](#)

Alternative Population

15. Lee CY, Hung MH, Lin LH, Chen DF. Evaluation of a water-soluble contrast agent for the conservative management of adhesive small bowel obstruction in pediatric patients. *J Pediatr Surg.* 2015;50(4):581-585.
[PubMed: PM25840067](#)
16. Hatanaka A, Nakahara S, Takeyama E, Iwanaka T, Ishida K. Management of extremely low birth weight neonates with bowel obstruction within 2 weeks after birth. *Surg Today.* 2014;44(12):2269-2274.
[PubMed: PM24407284](#)

Alternative Outcome

17. Kuehn F, Weinrich M, Ehmann S, Kloker K, Pergolini I, Klar E. Defining the need for surgery in small-bowel obstruction. *J Gastrointest Surg.* 2017;21(7):1136-1141.
[PubMed: PM28409293](#)
18. Paily A, Kotecha J, Sreedharan L, Kumar B. Resolution of adhesive small bowel obstruction with a protocol based on Gastrografin administration. *J Med Life.* 2019;12(1):10-14.
[PubMed: PM31123519](#)
19. Cossé C, Sabbagh C, Carroni V, Galmiche A, Rebibo L, Regimbeau JM. Impact of a procalcitonin-based algorithm on the management of adhesion-related small bowel obstruction. *J Visc Surg.* 2017;154(4):231-237.
[PubMed: PM28153520](#)

Guidelines and Recommendations – Methodology Not Specified

20. Wisniewski P, de Torres AT, Renda ML, Bayouth LA. Small bowel obstruction. Orlando (FL): Orlando Health Surgical Critical Care Fellowship; 2014:
<http://www.surgicalcriticalcare.net/Guidelines/SBO%202014.pdf>. Accessed 2019 Jul 12.

Review Articles

21. D'Agostino R, Ali NS, Leshchinskiy S, Cherukuri AR, Tam JK. Small bowel obstruction and the Gastrografin challenge. *Abdom Radiol (NY)*. 2018;43(11):2945-2954.
[PubMed: PM29632988](#)