Peripheral Parenteral Nutrition for Adult Patients in Hospital Settings: Clinical Effectiveness and Cost-Effectiveness
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Questions or requests for information about this report can be directed to requests@cadth.ca
Research Questions

1. What is the clinical effectiveness of peripheral parenteral nutrition for adult patients who are not meeting their nutritional needs through enteral feeding in hospital settings?

2. What is the cost-effectiveness of peripheral parenteral nutrition for adult patients who are not meeting their nutritional needs through enteral feeding in hospital settings?

Key Findings

Three randomized controlled trials (including one pilot study) and one non-randomized study were identified regarding the clinical effectiveness of peripheral parenteral nutrition for adult patients who are not meeting their nutritional needs through enteral feeding in hospital settings. However, no economic evaluations were identified regarding the cost-effectiveness of peripheral parenteral nutrition for adult patients who are not meeting their nutritional needs through enteral feeding in hospital settings.

Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE All (1946–) via Ovid, Cumulative Index to Nursing and Allied Health Literature (CINAHL), 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 peripheral parenteral nutrition. 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 01, 2014 and October 25, 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>
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<th>Table 1: Selection Criteria</th>
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<td><strong>Population</strong></td>
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<td><strong>Intervention</strong></td>
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<td><strong>Comparators</strong></td>
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| **Outcomes** | Q1: Clinical effectiveness (e.g., benefits, harms, nutritional adequacy, length of stay, infection, phlebitis [inflammation of the vein], blood clots in the vein [venous thrombosis])
Q2: Cost-effectiveness (e.g., incremental cost per quality-adjusted life year or health benefit gained) |
| **Study Designs** | Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations |
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, non-randomized studies, and economic evaluations.

Three randomized controlled trials1-3 (including one pilot study3) and one non-randomized study4 were identified regarding the clinical effectiveness of peripheral parenteral nutrition for adult patients who are not meeting their nutritional needs through enteral feeding in hospital settings. However, no economic evaluations were identified regarding the cost-effectiveness of peripheral parenteral nutrition for adult patients who are not meeting their nutritional needs through enteral feeding in hospital settings. Furthermore, no relevant health technology assessments, systematic reviews or meta-analyses were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

Three randomized controlled trials1-3 (including one pilot study3) and one non-randomized study4 were identified regarding the clinical effectiveness of peripheral parenteral nutrition for adult patients who are not meeting their nutritional needs through enteral feeding in hospital settings.

Jin et al.1 compared peripheral parenteral nutrition to an isotonic electrolyte solution in a randomized controlled trial of post-surgery gastric cancer patients. The results of the trial, which included 80 patients, suggested that peripheral parenteral nutrition for 4-8 days post gastric cancer surgery may significantly improve nutritional and psychological status as well as quality of life and immune function in patients when compared to a control.

The second randomized controlled trial by Kruger et al.2 compared peripheral parenteral nutrition to control in 100 patients being worked-up for suspected biliopancreatic tumors. The authors of the study concluded that patients with suspected biliopancreatic tumors were able to stabilize their body weight with peripheral parenteral nutrition during the fasting periods of the work-up.

The third randomized controlled trial by Saito et al.3 compared the administration of total parenteral nutrition through a central catheter to a peripheral line in perioperative esophageal cancer patients undergoing esophagectomy. This pilot study, which included 40 patients, suggested that perioperative management of patients with peripheral parenteral nutrition is suitable as there was no significant difference in calories administered, albumin and red blood cell levels as well as morbidity of early postoperative complications.

Finally, Hsieh et al.4 conducted a non-randomized retrospective study comparing the administration of peripheral parenteral nutrition to no treatment in the recovery of right lobe liver donors. This study, which included 84 donors, suggested that peripheral parenteral nutrition significantly decreased the incidence of postoperative atelectasis, pleural effusion and total complications compared to control (those who did not receive postoperative peripheral parenteral nutrition).
References Summarized

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials


Non-Randomized Studies

Economic Evaluations
No literature identified.
Appendix — Further Information

Previous CADTH Reports


Systematic Reviews and Meta-analyses

Unclear Access Route

   PubMed: PM31107970

   PubMed: PM29883514

Mixed Population

   PubMed: PM28524930

Ongoing Reviews


Randomized Controlled Trials

Unclear Access Route

   PubMed: PM30448193


Alternative Intervention


Alternative Comparator - Subcutaneous Parenteral Nutrition


Alternative Outcomes


Non-Randomized Studies

Unclear Access Route


No Comparator


Economic Evaluations

Unclear Access Route