Propofol for Conscious Sedation During Endoscopies: Clinical Effectiveness, Cost-Effectiveness, and Guidelines
SUMMARY OF ABSTRACTS  Propofol for Conscious Sedation During Endoscopies 2

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**Acknowledgments:**

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Research Questions

1. What is the comparative clinical effectiveness of propofol versus fentanyl or midazolam for conscious sedation during endoscopy procedures?

2. What is the cost-effectiveness of propofol versus fentanyl or midazolam for conscious sedation during endoscopy procedures?

3. What are the evidence-based guidelines for the use of propofol for conscious sedation during endoscopy procedures?

Key Findings

One systematic review, three randomized controlled trials, and two non-randomized studies were identified regarding propofol for conscious sedation during endoscopies. Additionally, two evidence-based guidelines were identified.

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 methodological 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, 2012 and November 1, 2017. Internet links were provided, where available.

Selection Criteria

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

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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>Comparator</strong></td>
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| **Outcomes**                | Q1: Clinical benefit and harms (e.g., safety, pain control, complications)  
|                             | Q2: Cost-effectiveness outcomes (e.g., QALYs, ICERs, ICURs) |
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, economic evaluations, and evidence-based guidelines.

One systematic review, three randomized controlled trials, and two non-randomized studies were identified regarding propofol for conscious sedation during endoscopies. Additionally, two evidence-based guidelines were identified. No health technology assessments or economic evaluations were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

One systematic review,\(^1\) three randomized controlled trials (RCTs),\(^2,4\) and two non-randomized studies\(^5,6\) were identified regarding propofol for conscious sedation during endoscopies. The identified systematic review\(^1\) compared adverse events associated with propofol and non-propofol agents (including midazolam or fentanyl) during endoscopy procedures, including esophagogastroduodenoscopy, colonoscopy, and sigmoidoscopy. The odds of developing hypoxia or hypotension were lower with propofol than the odds of developing hypoxia or hypotension when compared with the traditional sedative agents for endoscopy, but these odds were not significant. However, in the non-advanced endoscopic procedures group, patients who received propofol were 39% less likely to develop complications. There were no differences in the advanced endoscopic procedures group.\(^1\)

The authors of the first identified RCT\(^2\) compared the use of propofol and midazolam during esophagogastroduodenoscopies patients being screened for gastric cancer. No differences were found between the two sedation methods for sedation level and tolerability. The authors of the second RCT\(^3\) randomly assigned patients who were receiving endoscopic submucosal dissection to propofol or midazolam as the sedation method. The number of patient requiring a supply of oxygen was significantly lower in the propofol group than in the midazolam group.\(^3\) The authors found that although propofol appeared to perform better in terms of effectiveness and safety, none of the chosen endpoints were significantly different.\(^3\) The authors of the third RCT\(^4\) examined the sedation efficacy of propofol compared to a combination of midazolam and fentanyl during endomicroscopic procedures. The number of adverse events did not differ between the two sedation methods, with the exception of more frequent intraprocedural recall with midazolam/fentanyl. Recovery from the procedure was faster in all three identified RCTs when compared to midazolam\(^2,3\) or midazolam/fentanyl.\(^4\)

Two non-randomized studies (NRSs) were identified.\(^5,6\) The authors of the first retrospective NRS examined cardiac arrests in patients who underwent endoscopies sedated with either propofol or midazolam combined with fentanyl. The incidence of cardiac arrest was approximately 10 times higher in propofol based sedation when compared to
midazolam/fentanyl based sedation. The authors of the final NRS compared propofol with midazolam during esophagogastroduodenoscopy in children and found no serious adverse events with either method. The recovery time was noted to be much shorter in the propofol group when compared to the midazolam group, but localized pain was more common in the propofol group when compared to the midazolam group.

Finally, two evidence-based guidelines were identified. The first guideline published by European Society of Gastrointestinal Endoscopy (ESGE) and the European Society of Gastroenterology and Endoscopy Nurses and Associates (ESGENA) suggests propofol monotherapy when propofol is used by non-anesthesiologists. The guideline suggests that there is higher patient satisfaction (with various endoscopy procedures but not including esophagogastroduodenoscopy), shorter recovery times, and fewer cardiopulmonary complications with propofol when compared to “traditional” sedative methods. No differences between propofol and traditional sedation were found for hypoxemia and hypotension.

The second guideline published by the American Society for Gastrointestinal Endoscopy (SAGES) states that adequate sedation during esophagogastroduodenoscopy can be achieved using an opioid in combination with a benzodiazepine. The routine use of propofol during upper endoscopy and colonoscopy in average-risk patients is not endorsed by SAGES, as definitive, clinically important benefits have not been demonstrated.

No relevant economic evaluations were identified, therefore no information on costs or cost-effectiveness can be provided.

References Summarized

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses

Randomized Controlled Trials


Non-Randomized Studies


Economic Evaluations
No literature identified.

Guidelines and Recommendations

Appendix — Further Information

Previous CADTH Reports


Systematic Review – Unclear Comparator


Randomized Controlled Trials – Alternative Population


Review Articles


Additional References

Systematic Review Protocol


Note: This publication is forthcoming and is yet to be published.

Available from:
http://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42017057305