TITLE: 3D versus 2D Endoscopes for Endoscopy Procedures: Comparative Clinical Effectiveness and Cost-Effectiveness

DATE: 11 August 2015

RESEARCH QUESTIONS

1. What is the comparative clinical effectiveness of 3D versus 2D endoscopes for endoscopy procedures?

2. What is the cost-effectiveness of 3D versus 2D endoscopes for endoscopy procedures?

KEY FINDINGS

Three randomized controlled trials and one non-randomized study were identified regarding clinical effectiveness of 3D versus 2D endoscopes for endoscopy procedures.

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. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, and economic evaluations. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and July 28, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
SELECTION CRITERIA

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

Table 1: Selection Criteria

<table>
<thead>
<tr>
<th>Population</th>
<th>Patients undergoing endoscopy (e.g., colonoscopy, gastroscopy)</th>
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<tbody>
<tr>
<td>Intervention</td>
<td>3D endoscopes</td>
</tr>
<tr>
<td>Comparator</td>
<td>2D (traditional) endoscopes</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Improved clinical outcomes/diagnosis; Procedure time; Cost-effectiveness</td>
</tr>
<tr>
<td>Study Designs</td>
<td>Health technology assessment, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations</td>
</tr>
</tbody>
</table>

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 trials and one non-randomized study were identified regarding clinical effectiveness of 3D versus 2D endoscopes for endoscopy procedures. No relevant health technology assessments, systematic reviews, meta-analyses, or economic evaluations were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One randomized controlled trial (RCT)\(^1\) compared 3-dimensional (3D) and 2-dimensional (2D) neuroendoscopy. Procedure time was significantly shorter and depth perception was significantly greater when using 3D neuroendoscopy. One non-randomized study\(^4\) compared 3D and 2D endoscopic endonasal parasellar operations. No significant difference in total surgical time was reported between groups; however, pituitary adenoma resection took significantly less time when using the 3D endoscope.

One RCT\(^2\) compared the use of 3D and 3D endoscopes for transanal operations for rectal tumours. The authors reported no technical or clinical differences between the two types of endoscopes; however, procedure cost was significantly lower with the 2D system. Another RCT\(^3\) compared 3D and 2D navigation of the bowel for colorectal cancer screening. Procedure time was significantly shorter and reported pain intensity was significantly lower in the 3D group.
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.

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APPENDIX – FURTHER INFORMATION:

Randomized Controlled Trials – Simulation

PubMed: PM26079918

Non-Randomized Studies

Non-Comparative

PubMed: PM23599072

Simulation

PubMed: PM21679524