RESEARCH QUESTIONS

1. What is the evidence for the clinical effectiveness of SYMBIS for spine application?
2. What is the evidence for the cost-effectiveness of SYMBIS for spine application?
3. What is the evidence for the clinical effectiveness of SYMBIS for neurosurgery?
4. What is the evidence for the cost-effectiveness of SYMBIS for neurosurgery?

KEY FINDINGS

One non-randomized study regarding the clinical effectiveness of SYMBIS for neurosurgery was identified.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 12), 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, 2009 and December 1 2014. 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 | Q1,2: Adult patients requiring surgery for spine disease (e.g., degenerative disc diseases, spinal infections, spinal tumours, spinal trauma) that involves pedicle screw placement  
Q3,4: Adult patients with brain tumours, radiation necrosis, intractable epilepsy, brain vascular malformations, or spinal cord tumours |
|---|---|
| Intervention | Q1,2: Pedicle screw placement using SYMBIS (previously NeuroArm) (IMRIS Inc.) for spine application  
Q3,4: SYMBIS (IMRIS Inc.) for neurosurgery |
| Comparator | Q1,2: Freehand screw placement, minimally invasive surgery with percutaneous screw placement, fluoroscopy guided screw placement, or no comparator  
Q3,4: Microsurgery often with intra-operative MR imaging; or no comparator |
| Outcomes | Q1: Benefits (e.g. shorter operating times when coupled to other technologies such as laser ablation, decrease in revision surgery rates, decreased complications); Harms  
Q3: Benefits (e.g., improved safety due to precision and accuracy of the device, shorter operating times; Harms  
Q2,4: Cost effectiveness |
| Study Designs | Health technology assessment reports, 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.

One non-randomized study regarding the clinical effectiveness of SYMBIS for neurosurgery was identified. No relevant health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials or economic evaluations, and no evidence regarding the clinical effectiveness of SYMBIS for spine application or cost-effectiveness was identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.
Non-Randomized Studies


Economic Evaluations
No literature identified.

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APPENDIX – FURTHER INFORMATION:

Systematic Reviews and Meta-analyses – Robotic Technology Unspecified


Non-Randomized Studies

Alternate Procedures


Unclear Clinical Outcomes


Case Studies


Review Articles
