TITLE: Integrated Imaging and Surgical Technologies for Cardiology and Neurology: Clinical and Cost-Effectiveness

DATE: 28 May 2010

RESEARCH QUESTIONS:

1. What is the clinical effectiveness of the Integrated Surgical Magnetic Resonance Imaging System (IMRIS) for patients undergoing cardiac or neurological surgery?

2. What is the cost-effectiveness of IMRIS for patients undergoing cardiac or neurological surgery?

3. What is the clinical effectiveness of other integrated imaging and surgery technologies for patients undergoing cardiac or neurological surgery?

4. What is the cost-effectiveness of other integrated imaging and surgery technologies for patients undergoing cardiac or neurological surgery?

METHODS:

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 4, 2010), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI (Health Devices Gold), EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between Jan 1, 2005 and May 13, 2010. Filters were applied to research questions 3 and 4 to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, controlled clinical trials, and economic studies. An observational filter was also applied to a focused search (main concepts appeared in title or subject heading) for targeted observational studies. No filters were applied to research questions 1 and 2. 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.

RESULTS:

HTIS 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, controlled clinical trials, observational studies, economic evaluations, and evidence-based guidelines.

No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, controlled clinical trials, or economic evaluations were identified. Thirteen observational studies were identified from the literature search results. Additional potentially relevant abstracts are listed in the appendix.

OVERALL SUMMARY OF FINDINGS:

The clinical effectiveness of intraoperative magnetic resonance imaging (iMRI) was assessed in seven studies in patients with gliomas.\(^1\)\(^-\)\(^3\)\(^,\)\(^9\)\(^,\)\(^12\)\(^,\)\(^13\) iMRI was reported to be safe and effective for tumour resection in patients with gliomas.\(^1\)\(^,\)\(^3\)\(^,\)\(^5\)\(^,\)\(^9\)\(^,\)\(^12\) Two of the studies indicated that use of iMRI was cost-effective,\(^1\)\(^,\)\(^2\) and another reported that the use of iMRI was associated with improved survival.\(^13\) The use of iMRI was also found to be effective for resection in patients with cerebral metastases\(^4\) and pituitary macroadenomas.\(^7\)\(^,\)\(^8\) The clinical effectiveness of iMRI was also demonstrated for pediatric neurosurgical patients.\(^10\)\(^,\)\(^11\) One study investigated the indications for use of iMRI and found that gliomas were the best indication.\(^6\) Overall, the identified studies suggest that iMRI is safe and effective.
REFERENCES SUMMARIZED:

Health technology assessments
No literature identified

Systematic reviews and meta-analyses
No literature identified

Randomized controlled trials
No literature identified

Controlled clinical trials
No literature identified

Observational studies


**Economic evaluations**
No literature identified

**PREPARED BY:**
Health Technology Inquiry Service
Email: htis@cadth.ca
Tel: 1-866-898-8439
APPENDIX – FURTHER INFORMATION:

Review articles
