



<b>Title</b>	<b>Gamma Knife Radiosurgery</b>
<b>Agency</b>	<b>MSAC, Medical Services Advisory Committee</b> Commonwealth Department of Health and Ageing, MDP 106, GPO Box 9849, Canberra ACT 2601, Australia; Tel: +61 2 6289 6811, Fax: +61 2 6289 8799; msac.secretariat@health.gov.au, www.msac.gov.au
<b>Reference</b>	MSAC Reference 34 Assessment report. ISBN 1-74186-030-X. Ms Merry Pearson edited the report

## Aim

To assess the safety, effectiveness, and cost effectiveness of gamma knife (GK) in treating cerebral metastases, arteriovenous malformations (AVMs), acoustic neuromas, primary malignant lesions, meningiomas, and pituitary adenomas.

## Conclusions and results

*Safety:* Comparative safety evidence was minimal. GK appears to result in a lower rate of medium-term, treatment-related complications and procedural mortality than surgery for acoustic neuroma. Adding stereotactic radiosurgery (SRS) to whole brain radiotherapy (WBRT) for cerebral metastases may slightly increase the risk of serious radiation-related toxicity.

*Effectiveness:* Evidence from 1 randomized controlled trial (RCT) shows a small increase in survival for patients with single (but not multiple) metastases treated by SRS plus WBRT, versus WBRT alone. One RCT indicated no difference in survival, neurological function, or quality of life for patients with primary lesions treated by SRS in addition to radiotherapy, surgery, and chemotherapy, versus these treatments without SRS. Observational evidence suggests no difference in survival for patients with cerebral metastases or primary malignancies treated by GK versus Linac. GK may be comparable to surgery for controlling progression of acoustic neuroma, and may also improve quality of life, hearing preservation, and facial function in those ineligible for surgery. The evidence shows that patients with residual nonfunctioning pituitary adenoma benefit, in terms of tumor progression, from GK after surgery compared with observation. Conclusions could not be drawn on the comparative effectiveness of GK for meningioma and AVMs.

*Cost effectiveness:* The base case estimate of the cost-per-treatment for GK was 3757 Australian dollars (AUD) compared to a range of AUD 960 to AUD 3549 for an adapted Linac unit.

## Recommendations

Gamma knife radiosurgery is safe, appears to be effective, but is not cost effective when compared with Linac stereotactic radiosurgery. MSAC recommends no change in current funding arrangements. The Minister for Health and Ageing endorsed GK radiosurgery in 2006.

## Methods

MSAC conducted a systematic review of the biomedical literature (MEDLINE, EMBASE, Pre-Medline, Current Contents, Cinahl, ACP Journal Club, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effectiveness, and Cochrane Controlled Trials Register) from 2001 to September 2005 to update its previous assessment of GK. Reference lists and HTA websites were also searched. A partial economic costing was conducted due to the limitations of the evidence for effectiveness.

## Further research/reviews required

N/A