Methods for a trial-based economic evaluation of whole brain radiotherapy in melanoma

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Background

• There is an urgent need for robust evidence of the cost-effectiveness of radiotherapy services in advanced cancer
• This project focuses on an evaluation of the costs and benefits of adjuvant whole brain radiotherapy treatment to reduce distal intracranial failure, using a current ongoing randomised trial in melanoma
• This economic evaluation and quality of life sub-study will provide a clear assessment of the resources required to achieve patient-important outcomes like survival and quality adjusted survival, as well as a framework for calculating costs and measuring health benefits that will be transferable to other radiotherapy trials

Aims

1. To determine the cost-effectiveness of whole brain radiotherapy compared to observation to reduce distal intracranial failure in patients with locally treated melanoma brain metastases, from the perspective of (a) the health system, and (b) patients incurring out-of-pocket costs
2. To apply Australian quality adjusted life year (QALY) weights from the newly developed European Organisation for Research and Treatment of Cancer (EORTC)-BD instrument for use in economic evaluations, and compare these with mapped melanoma-specific QALY weights

Methods

A trial-based economic evaluation is proposed to be conducted alongside the Cancer Australia-funded whole brain radiotherapy trial in melanoma1 #1009485, led by the Australia and New Zealand Melanoma Trials Group. The trial is underway predominantly in Australia, with international sites in the United Kingdom, Norway, United States and Brazil

Trial Schema

Cost-effectiveness

The primary end point of the trial (distal intracranial failure at 12 months) will be reported as an incremental cost effectiveness ratio2

• ICER in $/distal intracranial failure avoided

The secondary end points of overall survival and quality of life at 12 months will be presented as:
• ICER reported in $/life year gained
• ICER reported in $/QALY

The incremental cost-effectiveness ratio will be calculated as follows:

ICER = \frac{\text{Cost (WBRT) - Cost (Observation)}}{\text{Effect (WBRT) - Effect (Observation)}}

References:

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