Title **Intravascular Ultrasound (IVUS), July 2001**

Agency **MSAC, Medical Services Advisory Committee**

Commonwealth Department of Health and Ageing
GPO Box 9848 Canberra ACT 2601 Australia; Tel: +61 2 6289 6811, Fax: +61 2 6289 8799
http://www.msac.gov.au

Reference MSAC Application 1032. Assessment Report ISSN 1443-7120

Aim

To assess the safety and effectiveness of intravascular ultrasound and the circumstances under which public funding should be supported for the service.

Conclusions and results

Safety: IVUS appears to be relatively safe. Adverse events relate primarily to vasospasm (readily treated with intravenous nitrate therapy). The rate of major acute procedural complications associated with IVUS, eg, dissection or vessel closure, is about <0.5%. Major complications are more likely in therapeutic IVUS than in diagnostic IVUS imaging.

Effectiveness:

Diagnosis: Information from IVUS appears to complement coronary angiography. It more accurately shows the likely extent of coronary and peripheral vessel lesions; appears to have good sensitivity and specificity for detecting plaque dissections and media rupture, but lower sensitivity for detecting plaque rupture and thrombus formation; has quite high accuracy in predicting the likely functional severity of lesions; and provides information on plaque composition. Some evidence suggests that it can predict clinical events, and alter management of patients with angiographically indeterminate or ambiguous lesions.

Treatment: RCT evidence suggests that stents placed with IVUS guidance reduces the odds (statistically significant) of patients requiring target lesion revascularization (TLR) at 9–12 months in the IVUS vs non-IVUS treatment groups (odds ratio 0.73, 95% CI 0.54 –0.99, p=0.04) It is unclear whether the reduction in TLR can be sustained over longer followup or will improve either Q-wave myocardial infarction or survival, as the trials were not powered to detect significant differences in these parameters.

Cost-effectiveness: Using published RCT evidence, the estimated baseline cost per clinically-driven target lesion revascularization (TLR) prevented from IVUS-guided stent deployment is about $26 000. This estimate varies from about $12 000 to $800 000 per TLR prevented over the evidence-based ranges examined in sensitivity analyses.

Recommendations

MSAC recommended against public funding due to insufficient evidence on the effectiveness and cost effectiveness of IVUS as a diagnostic or therapeutic tool.

Method

A systematic literature review by the NHMRC Clinical Trials Centre addressed (a) the diagnostic accuracy of IVUS and (b) its role as an adjunct to coronary interventions. Biomedical databases, existing reviews, the Internet, and international HTA organization websites were searched. For (a) the literature was searched from 1990 to August 2001 and, for (b), from 1999–2000, with pre-1999 papers identified by Berry et al. 2000[1].

[1]Berry, E. et al (2000) "Intravascular ultrasound-guided interventions in coronary artery disease: a systematic literature review, with decision-analytic modeling, of outcomes and cost effectiveness", Health Technology Assessment (South Hampton, NY), vol. 4, no. 35, pp. 1-117.

Written by Kirsten Howard (epidemiologist) and Sally Wortley, NHMRC CTC, Australia