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Title **Economic Evaluation of Drug Eluting Stents**

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Aim

To examine the cost effectiveness of drug eluting stents (DES) relative to bare metal stents (BMS) from the perspectives of both a tertiary care hospital and a provincial ministry of health. The impact on expenditures if DES were to become widely adopted in treating patients with coronary heart disease was also examined. These questions were addressed through an economic evaluation and a budget impact analysis.

Conclusions and results

Mortality and myocardial infarction (MI) rates did not differ with DES compared to BMS. Drug eluting stents are associated with higher costs and lower target lesion revascularization (TLR) when compared with BMS. From a hospital perspective, the paclitaxel eluting stent involved an additional cost relative to BMS of between $26 562 and $29 048 per TLR avoided. From a provincial health ministry perspective, the ICER for the paclitaxel stent was estimated at $25 202 to $27 687 per TLR avoided. For the sirolimus eluting stent, from a hospital perspective, the ICER was $12 527 to $16 600 per TLR avoided. From a provincial health ministry perspective, it was $11 133 to $15 192 per TLR avoided. The impact on the 2003 Ontario budget of converting 40% of patients considered to be at high risk of restenosis from BMS to DES was estimated to be an additional $4.8 to $14.6 million per year depending on the stent cost ($1200 and $2400 respectively). If all BMS patients were converted to DES in Ontario, then $12.1 to $48.9 million could be added to the provincial budget. While DES are more costly than BMS, their use is associated with a significantly lower 1-year rate of restenosis, which avoids associated treatment costs. Long-term survival data are unavailable.

Recommendations

Not applicable.

Methods

A decision analytic model was developed to compare the cost effectiveness of sirolimus and paclitaxel DES relative to BMS, using a cost per TLR avoided. The model simulated the 1-year resource consumption and clinical outcomes for patients undergoing percutaneous coronary interventions (PCI) and receiving either a DES or BMS in two pivotal studies (SIRIUS and TAXUS IV) and a meta-analysis of sirolimus and paclitaxel DES studies. The model was based on clinical trial data and treatment algorithms for acute coronary syndrome. Perspectives were those of a tertiary care teaching hospital, and the total expected costs and outcomes for DES versus BMS were compared in an incremental cost-effectiveness analysis. A budget impact analysis and several sub-analyses were performed.

Further research/reviews required

Given that costs were the key source of uncertainty in the analysis, there is a need for better data collection at the provincial and national levels. A national cardiovascular database to record procedural data and costs would meet that need.

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