

Di Tanna GL, Ferro S, Cipriani F, Bordini B, Stea S, Toni A, Silipo F, Pirini G, Grilli R.

Modeling the cost-effectiveness for cement-less and hybrid prosthesis in total hip replacement in Emilia Romagna, Italy.

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Source

Department of Experimental Medicine, Sapienza University of Rome, Italy.
gianluca.ditanna@uniroma1.it

Abstract

BACKGROUND

The aim of the present study was to assess the cost-effectiveness of cement-less versus hybrid prostheses in total hip replacement (THR) in patients diagnosed with primary osteoarthritis.

METHODS

Effectiveness data were obtained from the Emilia-Romagna Regional Registry on Orthopaedic Prosthesis (RIPO), which collects information on all orthopaedic intervention performed in Emilia-Romagna (41,199 total hip replacements performed from 2000 to 2007), and from which we obtained survival curves and transition probabilities for the cement-less and hybrid prostheses, respectively. Conversely, costs were derived from regional databases through a specific procedure, which allowed us to register individual component's costs for both primary and subsequent revision interventions. A specific Markov transition model was constructed in order to consider the 3 types of revisions that an implant could possibly undergo through its life-span: total, cup or stem, head insert or neck. The cost-effectiveness was expressed in terms of cost per "revision-free" life year.

RESULTS AND CONCLUSIONS

Considering a 70-y old patient undergoing THR, the cementless strategy resulted more effective but more costly than the hybrid solution, with an incremental cost effectiveness ratio of 2401.63 € per revision-free life year. Following a deterministic sensitivity analysis, hybrid and cementless fixation showed, respectively, a dominance profile for patients older than 83 y and younger than 43 y, whereas for all ages in between, we report a progressive increase in the ICER of cementless prostheses. Our results proved to be robust, as underlined by the probabilistic sensitivity analysis performed using cost distributions.