

TOTAL KNEE ARTHROPLASTY: QUALITY ASSURANCE AND IMPROVED LONGEVITY COSTS LESS

Authors: F. Getachew¹, L, Hu¹, I, Afzal¹, N.Clement^{1,2}, P. Mitchell¹, DF Kader¹

The Academic Surgical Unit (ASU) at the South West London Elective Orthopaedic Centre
Department of Orthopaedics and Rheumatology, Royal Infirmary of Edinburgh

Introduction

There is an accepted variation in the financial cost of total knee arthroplasty (TKA) implants but it is not known whether this cost is reflected by the evidence in support of their use.

A cost analysis study was carried out to determine the total cost of consumables of a TKA, and whether this was related to the supporting evidence and survivorship data.



Methods

Intra-operative data for all unilateral, cemented, primary TKA over a 13 month period at a high-volume Orthopaedic Centre was collected.

Level of evidence for each model was taken from the Orthopaedic Data Evaluation Panel (ODEP) website, and data from the UK National Joint Registry was used to assign survivorship (failure rates). Correlation was calculated using the Spearman rank correlation (r).

Results

A total of 1301 TKA were performed at the study centre during the data collection period 13-month period, 1st July 2018 to 31st July 2019.

The mean cost of consumables for a TKA with **patella resurfacing** (n=816) was **£1,969.08** (range of £1061.46 and £5143.89), and **without resurfacing** (n=485) was **£1,846.62** (range of £1118.98 and £4196.81).

There was a **negative correlation** between **price of implant** and **ODEP rating** (r=-0.47), with increasing level of evidence being associated with a lower cost.

There was a **positive correlation** between **price of implant** and **rate of implant failure** at the 1-, 3- and 5-year time-points (r=0.55, 0.44, 0.28 respectively), with increasing cost being associated with a higher failure rate.

Comparison of price of implant with 5-year Kaplan-Meier estimate of cumulative revision

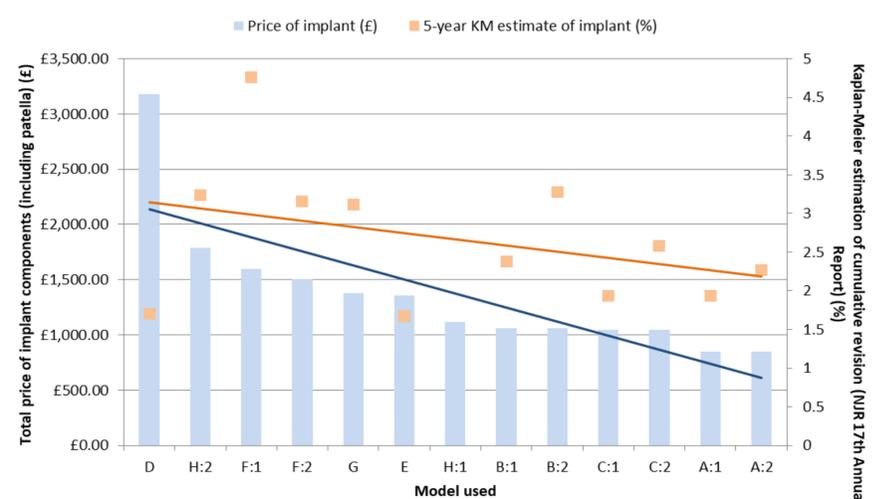


Fig 1. Comparison of price of implant with the 5-year Kaplan-Meier estimate of cumulative revision. The blue line represents the trend line for price of implants; the orange line represents the trend line for probability of revision. Of note, model H:1 does not have a KM estimate documented in the NJR report, due to its recent introduction to the market. The models were anonymised using the protocol stated in the Methods and Materials section (model denoted by letter; variant within a model denoted by a number).

Conclusions

Higher financial cost of TKA prostheses was associated with a weaker level of supporting evidence and a higher failure rate.

The increased financial cost of new implants may be justified as more data and evidence becomes available to support an advantage in its use over currently established implants.