# J.35 Thoracic surgery

| Study | [Wade 2015[985]] | | | |
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| **Study details** | **Population & interventions** | **Costs** | **Health outcomes** | **Cost-effectiveness** |
| **Economic analysis:** CUA (health outcome: QALYs )<br><br>**Study design:** Systematic review and economic model, including value of information analysis.<br><br>**Approach to analysis:** a two stage modelling approach, a decision tree for the acute phase (up to 14 days post-surgery) followed by Markov models for the long term phase with annual cycles. The relative effectiveness of the interventions was based on a systematic review and network meta-analysis (NMA) of published RCTs.<br><br>**Perspective:** UK NHS and PSS | **Population:**<br>Patients undergoing any general surgery (subgroups considered were THR, TKR, general surgery for high risk patients, general surgery for medium risk patients and general surgery for low risk patients. The results presented here are for the general surgery subgroups – high risk patients only.<br><br>**Cohort settings:**<br>Start age: 60 years<br>Male: 50%<br><br>**Intervention 1:**<br>LMWH (which is assumed to be the background pharmacological prophylaxis therapy administered to all patients) for a duration of 7 days (standard duration).<br>**Intervention 2:** | **Total costs (mean per patient):**<br>**High risk patients:**<br>Intervention 1: £521<br>Intervention 2: £522<br>Intervention 3 : £345<br><br>**Currency & cost year:**<br>2014 UK pounds<br>**Cost components incorporated:**<br>Prophylaxis costs.<br>Monitoring tests.<br>Nurse time.<br>VTE treatment costs.<br>Costs of treating adverse events , long term consequences and complications (CTEPH, PTS, bleeding, stroke, re-operation) | **QALYs (mean per patient):**<br><br>**High risk patients:**<br>Intervention 1: 12.755<br>Intervention 2: 12.758<br>Intervention 3 : 12.764 | **ICER:**<br>**High risk patients:**<br>Intervention 1: Dominated<br>Intervention 2: Dominated<br>Intervention 3: Dominant<br>95% CI: NR<br>Probability Intervention 1 cost-effective (£20K/30K threshold): 4%/4%<br>Probability Intervention 2 cost-effective (£20K/30K threshold): 18%/18%<br>Probability Intervention 3 cost-effective (£20K/30K threshold): 78%/79%<br><br>**Analysis of uncertainty:**<br>Probabilistic sensitivity analysis was conducted. Analyses were reported for two main scenarios :<br>iii- the base-case NMA based on the no interaction, random-effects analysis, using the predictive distribution output<br>iv- the direct meta-analysis comparing thigh-length AES (plus |

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| **Time horizon:** lifetime<br>**Treatment effect duration:**[(a)] 14 days<br>**Discounting:** Costs: 3.5% ; Outcomes: 3.5% | Knee-length AES in addition to pharmacological prophylaxis (LMWH) for a duration of 7 days (standard duration).<br>**Intervention 3:**<br>Thigh-length AES in addition to pharmacological prophylaxis (LMWH) for a duration of 7 days (standard duration). | | | pharmacological prophylaxis) with knee-length AES (plus pharmacological prophylaxis).<br><br>Additionally, sensitivity analysis changing the price used for AES (based on published prices and clinical experts estimate) and the level of patient adherence to thigh-length stockings (90% and 75%).<br><br>The results of all scenario and sensitivity analyses were largely consistent with the base case results. |
| **Data sources** | | | | |
| **Health outcomes:** baseline event rates were based on the ACCP 2012 guideline, which used systematic review of RCTs published between 2003 and 2010 and meta-analysis. LMWH was considered the baseline treatment. The relative treatment effect was based on a systematic review and NMA of RCT data. long-term events included are PTS, CTEPH, stroke, VTE recurrence, The main health outcomes included were DVT (symptomatic), DVT (asymptomatic), PE (symptomatic) and major bleeding. **Quality-of-life weights:** from published sources largely using the EQ-5D UK tariff. **Cost sources:** standard UK unit cost sources including NHS reference costs and the drug tariff in addition to data from published sources and clinical expert opinions. | | | | |
| **Comments** | | | | |
| **Source of funding:** NIHR HTA. **Limitations:** Mixed population of all surgery types, however subgroup analysis is also presented. The model did not include some relevant health outcomes; e.g. clinically-relevant non-major bleeding, minor bleeding and surgical site infection. | | | | |
| **Overall applicability:**[(b)] Partially applicable **Overall quality**[(c)] Potentially serious limitations | | | | |

*Abbreviations: AES: anti-embolism stockings; 95% CI: 95% confidence interval; CTEPH: chronic thromboembolic pulmonary hypertension; CUA: cost-utility analysis; da: deterministic analysis; EQ-5D: Euroqol 5 dimensions (scale: 0.0 [death] to 1.0 [full health], negative values mean worse than death); ICER: incremental cost-effectiveness ratio; NMA: network-meta-analysis; NR: not reported; pa: probabilistic analysis; PTS: post-thrombotic syndrome; QALYs: quality-adjusted life years; RCT: randomised controlled trial; TKR: total knee replacement; THR: total hip replacement.*

a) *For studies where the time horizon is longer than the treatment duration, an assumption needs to be made about the continuation of the study effect. For example, does a difference in utility between groups during treatment continue beyond the end of treatment and if so for how long.*
b) *Directly applicable / Partially applicable / Not applicable*
c) *Minor limitations / Potentially serious limitations / Very serious limitations*

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