

# Are there differences in cardiothoracic surgery performed by trainees vs fully trained surgeons?

Maria Comanici<sup>1</sup>, Yousuf Salmasi<sup>1</sup>, Katharina L. Schulte<sup>2</sup>, Shahzad Raja<sup>1</sup>, and Rizwan Attia<sup>1</sup>

<sup>1</sup>Royal Brompton and Harefield Hospitals

<sup>2</sup>Sana Gesundheitszentren Berlin-Brandenburg GmbH

July 28, 2022

## Abstract

**Objectives:** We sought to assess the safety of training in cardiothoracic surgery comparing outcomes of cases performed by trainees versus fully trained surgeons. **Methods:** EmBase, Scopus, PubMed, and OVID MEDLINE were searched in August 2021 independently by two authors. A third author arbitrated decisions to resolve disagreements. Inclusion criteria were articles on cardiothoracic surgery reporting on outcomes for trainees. Studies were assessed for appropriateness as per CBEM criteria. 892 results were obtained, 27 represented best evidence (2-Meta-analyses, 1-RCT and 24 retrospective cohort studies). **Results:** 474,160 operative outcomes were assessed for 434,535 CABG (431,329 on-pump vs 3206 off-pump), 3090 AVR, 1740 MVR/repair, 26,433 mixed, 3565 congenital and 4797 thoracic procedures. 398,058 cases were performed by trainees and 75,943 by consultants. 159 cases were indeterminate. There were no statistically significant differences in the patients' pre-operative risk scores. All studies excluded extreme high-risk patients in emergency setting, patients with poor left ventricular function and re-operation cases that were undertaken by consultants. There were no differences in CPB and clamp times for CABG. Times for valve replacement and repair cases were longer for trainees. There were no differences in the post-operative outcomes including peri-operative myocardial infarction, re-sternotomy for bleeding, stroke, renal failure, ITU length of stay and total length of stay. One study reported no differences on angiographic graft patency at 1 year. There were no differences in in-hospital or mid-term mortality out to five-years. **Discussion:** Trainees can perform cardiothoracic surgery in dedicated high-volume units with outcomes comparable to those of fully trained surgeons.

## Hosted file

TS vs FTS outcomes Final Manuscript 27.07.22.docx available at <https://authorea.com/users/497937/articles/578839-are-there-differences-in-cardiothoracic-surgery-performed-by-trainees-vs-fully-trained-surgeons>