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Title: Variation of Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) following orthopaedic surgery in Emilia-Romagna and Tuscany

Presenting Author(s): Chiara Seghieri²

Institutes: 1) University of Bologna, Bologna, Italy
2) Sant'Anna School of Advanced Studies, Pisa, Italy
3) Rizzoli Orthopaedic Institute, Bologna, Italy

Authors (s): Dario Tedesco¹, Chiara Seghieri², Elisa Carretta³, Tommaso Grillo Ruggieri², Simona Rosa¹, Maria Pia Fantini¹

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Abstract

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Background

DVT and PE are preventable and major postoperative complications. The Agency for Healthcare Research and Quality (AHRQ) has developed Patient Safety Indicator 12 (PSI 12) to screen for postoperative DVT/PE in the index hospitalisation using administrative data. However, DVT/PE can become clinically relevant also after discharge.

Objectives

To assess inter-hospital variation of DVT/PE occurring within 30 days from lower limb orthopaedic procedures in two Italian regions.

Methods

We calculated PSI 12 and a 'composite' indicator including PSI 12 and 30-day readmissions for DVT/PE. Data were drawn from the hospital discharge records of Emilia-Romagna (ER) (50 hospitals) and Tuscany (33 hospitals). We included all patients aged 18 years undergone lower limb orthopaedic procedures between 2012-2016. PSIs were calculated using the AHRQ SAS software. Readmissions were calculated according to the AHRQ's algorithm. 95% confidence intervals were computed to compare hospital-level rates to the overall regional rate.



Results

The study analysed 130,271 discharges in ER and 102,801 in Tuscany. Females were 59.1% in ER and 62.9% in Tuscany, mean age was 65.9 (SD=18.4) in ER and 69.8 (SD=16.3) in Tuscany. Overall, PSI 12 was 4.28x1000 (range 0.34-24.71) in ER and 5.47 (range 0.17-32.61) in Tuscany. The composite indicator was 6.63x1000 in ER and 8.46 in Tuscany. In ER PSI 12 rate was significantly lower than the regional rate in 6 hospitals (range 0.34-2.36) and higher in 8 hospitals (range 7.91-24.71). In Tuscany PSI 12 rate was significantly lower in 8 hospitals (range 0.17-2.12) and higher in 3 hospitals (range 8.37-32.61).

Conclusion/Discussion/Policy Perspective

We found variation between the regions and among the hospitals. Adding 30-day readmissions improved the detection of DVT/PE. Considering the existing guidelines to prevent these adverse events, this study shows that additional efforts are necessary to reduce unwarranted variation and improve patient safety.