

A national PSI 12 in orthopaedic surgery: validity three years after in-hospital release and perspectives for further use

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OBJECTIVES

► Improving care quality, patient safety and outcomes in total hip (THA) and total knee (TKA) arthroplasty: a shared objective between healthcare organisations (HCOs), healthcare professionals and patients. Patient safety indicator (PSIs) are measured in many countries. Since December 2016, a modified PSI 12 was released 3 consecutive years by the French national authority for health (HAS) to 740 HCOs.

► It measures in-hospital coded thromboembolic events (TEE, being either deep vein thrombosis-DVT or pulmonary embolism-PE) in adult patients undergoing THA or TKA.

In 2018, its predictive positive value (PPV, the percentage of clinically validated cases) was assessed and reasons for invalid flagging were identified.

Description of the modified PSI 12

Thrombo-embolic event (TEE) coded during the hospital stay	PE: ICD-10 codes I26.x And/or DVT: ICD-10 codes I80.1, I80.2, and the code I80.3, non specific, but used by healthcare professionals.
Target population	Inclusion criteria: adult patients undergoing THA or TKA. Exclusion criteria: patients transferred from another HCO, having a hip fracture, with urgent admission, benefiting from palliative care, and/or having a hip or knee surgery one month before admission.
Standardisation on 14 risk factors	Age, sex, replacement site (hip vs knee), 10 comorbidities and the median length of stay in the HCO. <i>Comorbidities, identified during the stay and one year before the THA/TKA are: History of PE and/or DVT, cancers, heart failure, chronic obstructive pulmonary disease, renal failure, obesity, coagulopathy, paralysis, cerebro-vascular disease, respiratory failure.</i>

METHODS

Between September and November 2018, retrospective analysis of PSI 12 flagged in the 2017 French medicoadministrative database was performed by voluntary HCOs.

HCO's with at least 1 TEE were provided with a specific software flagging their THA and TKA stays with TEE, with an automatic transfer of the corresponding information to an analysis grid, all being deployed within a secure informatics platform.

Each case was reviewed for cause of occurrence or reason for invalid flagging.

RESULTS

95 HCOs participated in TEE patient record reviewing

- They represent 25% of all HCOs with at least 1 coded TEE.
- 57 were private HCOs.
- 16 were outliers in 2018.

539 TEE flagged records were analyzed

504 of which were validated
425 DVT and 79 PE

PPV: 93.5%

5 patient records were not retrieved, and 35 were invalid flagging (history of TEE = 18, no TEE = 17)

Ultrasound was coded in 125 stays but used in 421 among 425 patients with DVT, half of them being asymptomatic.

Half of the TEEs were flagged in the 10% of outliers HCOs, probably due to ultrasound overuse

CONCLUSION

- The modified PSI 12 has a very high predictive ability to identify true cases. Interestingly, half of the DVT were asymptomatic, diagnosed by over-use of ultrasound, which is not recommended and exposes the patients to the iatrogenic effect of the treatment.
- Detection of TEE in computerized databases provides relevant and reliable information for inpatient safety and risk management. It is also a lever for improvement, including for ultrasound systematic use reduction, as HCOs over-using it are identified as outliers.
- Regarding the high PPV value and the 3 years appropriation period the modified PSI 12 has been used in 2018 for public reporting on the site Scope santé and for hospital financial management.
- Perspectives, after the first public reporting of a PSI in France, are to release another one in orthopaedic surgery measuring postoperative surgical infections 3 months after THA and TKA.

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