

# Algorithm validation for Peripheral artery disease diagnosis in French hospital discharge database (The ALPES study)

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## Abstract

**Objective:** Peripheral artery disease (PAD) of the lower extremities is a global health concern linked to substantial morbidity and mortality. Nevertheless, research on PAD within health administrative databases remains limited. This study aimed to develop and validate algorithms for the identification of patients with PAD using French health administrative data. **Methods:** The study was conducted at Bordeaux University Hospital from January 2018 to December 2019. Four algorithms combining International Classification of Diseases, Tenth Revision (ICD-10) codes and procedural codes were created (1: i70.2 code alone, 2: one diagnosis procedural code, 3: two diagnosis procedural codes, 4: one procedural code for revascularization/non-traumatic amputation). PAD status was confirmed through expert review of electronic medical records using consensus criteria. Sensitivity, specificity, and predictive values were assessed for each algorithm. **Results:** Among 700 randomly selected patients, 12% were diagnosed with PAD. The first algorithm, using the ICD-10 code i70.2, had the highest accuracy (sensitivity: 93%, 95%CI (confidence interval)85-97), specificity: 97%, 95%CI(95-98)). Other algorithms did not significantly improve these metrics. **Discussion:** This study allows considering that in-hospital coding is reliable for the identification of patients with symptomatic lower limb PAD in health administrative databases. The i70.2 code alone displayed the best performance for the identification of inpatient PAD. International validation studies for PAD algorithms would be needed to ensure that the proposed identification strategy presents with acceptable performances in other settings.

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