Objectives: To evaluate an impact of risk-based delivered cardiac catheterization (followed by revascularization, when indicated) on long-term survival in real-world NSTE-ACS patient population. ***Methods:*** We conducted a retrospective cohort study of NSTE-ACS patients with first hospitalization for an event between 2003 and 2013 using data from the Cardiovascular Health Nova Scotia registry. Multivariate logistic regression models were fit to analyze the association between patient characteristics and receiving catheterization at any time during hospitalization. To optimally risk stratify the study population we used a risk algorithm, the Nova Scotia NSTE-ACS Long Term Mortality Risk Score. We analyzed the association between each risk category and the procedure receipt as well as one-year mortality, adjusting for gender, place of residence, type of hospital, and clinical practice guideline period. ***Results:*** The study included 25,463 NSTE-ACS patients, those who received and who did not receive cardiac catheterization. Older age (>75 years) or prior comorbidities such as congestive heart failure, stroke, and renal insufficiency were significantly associated with decreased odds of receiving cardiac catheterization at any time during hospitalization. When stratified by risk, adjusted models indicated that higher-risk groups were significantly less likely to receive cardiac catheterization during hospitalization compared to low-risk patients (OR high-risk 0.31, 95% CI 0.27-0.34; OR very high-risk 0.11, 95% CI 0.10-0.13), while the reduction in the odds of one-year mortality was greatest for higher-risk (OR high risk 0.18, 95% CI 0.16-0.22; OR very high risk 0.20, 95% CI 0.17-0.24) compared to their low risk counterparts. ***Conclusions:*** The largest reduction in risk of one-year mortality was observed in higher-risk NSTE-ACS patients receiving cardiac catheterization at any time during hospitalization however, they were significantly less likely to receive the procedure compared to low-risk patients. Regular practice monitoring and outcomes reporting to a sustainable public-private partnership has a potential to improve NSTE-ACS patient outcomes.

Cardiovascular Disorders - Health Technology Assessment

PCV91
CAN DISPARITIES BETWEEN HEALTH TECHNOLOGY APPRAISAL (HTA) DECISIONS RESULT IN INEQUITABLE ACCESS TO TREATMENT? THE CASE OF NOVEL ORAL ANTICOAGULANTS (NOACS) IN THE PREVENTION OF STROKE IN NON-VALVULAR ATRIAL FIBRILLATION (NVAF)

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Objectives: HTA is based on either clinical and/or economic evaluations. Evaluation criteria are usually similar, however clear differences in conclusions and recommendations sometimes exist between health agencies. This study aims to evaluate disparities between HTA decisions for NOACs in the prevention of stroke and systemic embolism in NVAF patients. ***Methods:*** NOAC HTA reports were reviewed for Australia, Canada, France, the Netherlands, Spain, Sweden and the UK. Based on available data for dabigatran, rivaroxaban and apixaban, NICE, SMC, CADTH, PBAC and HAS were selected. Their evaluations were appraised using the Drummond checklist, with additional considerations from EUnetHTA and INAHTA recommendations. ***Results:*** NICE assessed the three NOACs in 2012-13. Compared to warfarin, all were deemed cost-effective, with ICERs below £20,000 to £29,500 per QALY gained. Similarly, SMC and CADTH accepted all three molecules between 2011 and 2013. PBAC issued a positive opinion on dabigatran, leading to reimbursement in 2011. In 2012, clinical uncertainties in the cost-utility analysis were initially noted for rivaroxaban, questioning its superiority over warfarin. Apixaban was also first rejected, mostly because of uncertainty around a potentially unacceptably-high ICER. Both were eventually reimbursed in 2013 under risk-sharing agreements. Unlike other agencies, HAS recommended NOACs in second line after VKA, because no other antidotes were available and anticoagulation monitoring was problematic. Dabigatran was assessed in 2008; apixaban and rivaroxaban followed in 2012, all with an SMR as “important”. In 2014, HAS revised dabigatran's SMR to “moderate” because the balance between efficacy and safety events was deemed “average”. The decision was eventually upheld in 2018 in its latest “efficiency notice”. Consequently, NOACs are less accessible to French patients, and with different degrees of reimbursement between them. ***Conclusions:*** Disparities in HTA recommendations can result in inequities in access to NOACs. These disparities occasionally impact patients indirectly in those countries which benchmark the decisions of other agencies.

Cardiovascular Disorders - Methodological & Statistical Research

PCV93
USING MACHINE LEARNING TO PREDICT ANTICOAGULATION CONTROL IN ATRIAL FIBRILLATION: A UK RETROSPECTIVE DATABASE STUDY

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Objectives: To investigate the predictive performance of machine learning (ML) algorithms for estimating anticoagulation control (AC) in patients with atrial fibrillation (AF), treated with vitamin K antagonists. ***Methods:*** This was a retrospective cohort study of adult patients (≥18 years) between 2007 and 2016 using linked primary and secondary care data (Clinical Practice Research Datalink GOLD and Hospital Episode Statistics). Various ML techniques were explored to predict poor AC, defined as time in therapeutic range (TTR) <70% based on international normalized ratio (INR) 2.0-3.0. Baseline (linear and non-linear support vector machines; random forests; stochastic gradient boosting [XGBoost]; neural networks [NN]) and time-varying data (6 week intervals up to 30 weeks (long-short term memory [LSTM] NN)) were employed. Patient records representing unique lines of warfarin therapy (LOT) were separated into training (70%) and holdout sets (30%) for model training and testing. ***Results:*** 35,479 patients were eligible for inclusion, of whom 24,684 and 10,795 were assigned to the training (32,683 unique LOTs) and holdout sets (14,218 unique LOTs). Across all models, depression was a significant driver in predicting AC. At baseline, XGBoost was the best-performing model (area under the curve [AUC]: 0.624) due to its ability to identify non-linear interactions for factors including age and weight (greater probability of poor control: <65 and >80 years and <70kg, respectively). Addition of time-varying data to the LSTM NN improved predictive performance, plateauing at AUC of 0.830 at 30 weeks. ***Conclusions:*** ML algorithms displayed very good ability in predicting patients at greater risk of poor AC. The addition of time-varying data to the algorithm, especially prior INR measurements, improved predictive performance. These algorithms may be clinically valuable in identifying and supporting patients who may benefit from more frequent INR monitoring or switching to therapies not requiring dose adjustments.

PCV94
COMPARATIVE EFFECTIVENESS OF DIRECT ORAL ANTICOAGULANTS FOR STROKE PREVENTION IN NON-VALVULAR ATRIAL FIBRILLATION

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Background: Indirect Treatment Comparisons (ITC) have been published on the comparative effectiveness of direct oral anticoagulants (DOACs) for stroke prevention in non-valvular atrial fibrillation (NVAF). Network Meta-Analyses (NMA) have focused on comparisons in overall trial populations, despite known differences in patient characteristics across treatments. Patients in routine NHS practice typically receive a DOAC conditional on baseline risk. ***Objectives:*** The study objective was to explore the comparative effectiveness of DOACs for stroke or systemic embolism prevention and major bleeding in a clinically relevant NVAF population. ***Methods:*** A systematic literature review was conducted to update the review published by Lopez-Lopez et al. A NMA was developed in a Bayesian framework using WinBUGS1.4.3. Minimally informative prior distributions were placed on all basic parameters. A fixed effect network meta-analysis was fitted assuming a binomial likelihood and logit link. Subgroup analyses were performed in a population defined by baseline stroke risk stratification according to CHADS2 score. ***Results:*** 44 publications were included, comprising 24 primary and 20 secondary publications for 24 trials. In the overall trial population and sub-group based on baseline CHADS2 score, DOACs were at least as effective as warfarin in reducing the risk of stroke and systemic embolism but the evidence did not suggest any individual DOAC was the most efficacious. However, in the overall population and CHADS2 subgroup, for major bleeding, the evidence suggested only edoxaban (overall population: OR 0.79, 95% CrI 0.7-0.9; subgroup: OR 0.79, 95% CrI 0.70-0.88) and apixaban (overall population: Odds Ratio (OR) 0.70, 95% CrI 0.61-0.81; subgroup, OR 0.73, 95% CrI 0.62-0.87) were superior to warfarin and to the other DOACs, dabigatran and rivaroxaban. ***Conclusions:*** Our analyses suggest that in a clinically relevant NVAF population, defined by CHADS2 score, DOACs are similar on clinical outcomes and that edoxaban and apixaban are superior to warfarin and the other DOACs on major bleeding.

Cardiovascular Disorders - Patient-Centered Research

PCV95
SERUM PHENYLALANINE AND TYROSINE ISOMERS IN ACUTE CORONARY SYNDROME PATIENTS

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Objectives: Under oxidative stress conditions, hydroxyl radicals can oxidize the phenyl ring of phenylalanine (Phe), which then produces various abnormal tyrosine (Tyr) isomers (meta-, ortho- and para-tyrosine; m-, o- and p-Tyr). These Tyr isomers different depending on the location of hydroxyl group on benzyl ring. This study aimed to compare patients with ST-segment elevation myocardial infarction (STEMI) and non ST-segment elevation myocardial infarction (NSTEMI) as well as to compare serum levels of Tyr isomers and Phe at the aortic root and after culprit lesion in both groups. ***Methods:*** The study was performed on 44 patients diagnosed with acute coronary syndrome (ACS), who were admitted into the cardiac catheterization laboratory (Department of Interventional Cardiology, Heart Institute, University of Pécs Clinical Centre) during the period from January 1, 2017 to March 3, 2017. Arterial blood samples