Indirect treatment comparison and economic evaluation of novel oral anticoagulants for the prevention of stroke in patients with atrial fibrillation in the Netherlands

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Hospital with suspected gynaecological malignancy and who fulfilled the inclusion criteria were recruited for the study. All patients with BMI less than 35 received Tinzaparin (4500 IU) once daily injection while those with BMI more than 35 received a higher dose (7500 IU). Two days post surgery; venous blood samples were collected for anti-Xa analysis 4 hours post Tinzaparin injection. **RESULTS:** The majority of patients received Tinzaparin of 4500 IU. The mean anti-Xa level in the malignant group was 0.191 IU/ml while in the benign group the level was 0.1740 IU/ml. There was no difference between the two groups. In the malignant group, the number of cases with peak anti-Xa levels below 0.1IU/ml was slightly higher than in the benign group. One patient with malignant disease developed VTE, in the immediate postoperative period and showed a low peak anti-Xa level (0.06IU/ml). **CONCLUSIONS:** The results of this study show that Tinzaparin prophylaxis provides adequate peak anti-Xa levels in the majority of gynae-oncology patients post surgery and is unlikely to be responsible for the high rates of VTE in cancer patients in the immediate post operative period. Larger studies are required to confirm this.

PCV12

IMPACT OF PILL-SPLITTING TRAINING ON DRUG PHYSIOCHEMICAL PROPERTIES, COMPLIANCE AND CLINICAL OUTCOMES IN ELDERLY POPULATION: A CROSS-OVER COHORT STUDY

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OBJECTIVES: Pill splitting is a common problem in Hong Kong public hospitals for flexible dose adjustment and cost containment, especially for chronic diseases' treatments such as hypertension, diabetes mellitus. The current study aimed to determine the importance of education on the proper way of pill splitting for elderly in Hong Kong by exploring their habits of pill splitting, evaluating their knowledge on pill cutting and investigating the impact of improper pill cutting habit. **METHODS:** Survey was conducted on elderly taking selected drugs require splitting (Metformin, Atenolol and Amlodipine) in 5 elderly centers. The survey focuses on habits and knowledge regarding pill cutting. Elderly subjects were asked to cut 3 pills that they were currently taking in their own ways. After proper education, they were asked to cut another 3 pills with a pill cutter. The collected sample were then weighed and analyzed. The result was then compared with ideal value of half of the whole pill. **RESULTS:** From the survey, 72% of the elderly have never received any education on pill cutting. Above half consider pill cutting troublesome. About half thought that all kinds of pills can be cut without affecting the expected effect. 80% cut pills for more than one dose each time, including 44% cut pills for 7 days' doses each time. From the experiment, the results of Metformin and Atenolol show that the cut drug samples' weights deviate a lot from the ideal value (50% of the whole pill) before education. After education, the samples' weights get closer to the ideal value. However, the result of Amlodipine does not show significant difference. **CONCLUSIONS:** Education can improve the accuracy of dose in regimen require pill splitting. Elderly in Hong Kong do not receive enough education on the proper way of pill splitting from the health care giver.

PCV13

TOTAL AND LOW-DENSITY LIPOPROTEIN CHOLESTEROL LEVELS IN HIGH RISK PATIENTS TREATED WITH ATORVASTATIN MONOTHERAPY IN THE UNITED KINGDOM

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OBJECTIVES: European guidelines recommend statins as first-line treatment for elevated cholesterol in patients at high cardiovascular (CV) risk; however, many patients do not attain guideline-recommended goals on statin monotherapy. As atorvastatin is now generically-available and its use is likely to increase, we examined recommended total cholesterol (TC) and low-density lipoprotein cholesterol (LDL-C) levels in high-risk patients treated with atorvastatin monotherapy in the UK. **METHODS:** In this retrospective UK general practice database study, included were patients with a prescription for atorvastatin monotherapy (IndexRx) between November 30, 2008-November 30, 30, 2011, who had evidence of coronary heart disease (CHD), atherosclerotic vascular disease (AVD), diabetes mellitus (DM), or familial hypercholesterolemia, ≥1 TC and LDL-C measurement 3-12 months post-IndexRx, and an atorvastatin prescription (to determine the daily dose) within 45 days of lipid measurements. Endpoints included proportions of patients (overall and by dose) below guideline-specific thresholds: TC<5.0, TC<4.0, and for patients with CHD/AVD+DM, TC<4.0 or LDL<2.0 mmol/L. **RESULTS:** Of 2999 high-risk patients (60.2% males, mean age 67.9 years [SD 10.6]) meeting selection criteria, 23.9, 28.2, 36.2, and 11.6% received prescriptions for 10-mg, 20-mg, 40-mg, and 80-mg atorvastatin, respectively. Further, 27.6% of patients were newly initiated with atorvastatin monotherapy at index date. Overall, mean follow-up TC was 4.08 (SD 0.80) and LDL-C was 2.08 (SD 0.65) mmol/L. The proportion of patients with TC<5.0 and <4.0 mmol/L was 88.8% and 45.8%, respectively. For those with CHD/AVD+DM, 63.7% had TC<4.0 or LDL-C<2.0 mmol/L. Generally, more patients were below lipid thresholds with higher atorvastatin doses. **CONCLUSIONS:** In UK patients at high CV risk, a substantial proportion did not achieve guideline-recommended lipid levels. Less than half of patients achieved TC<4.0 mmol/L, and only two-thirds of patients with CHD/AVD+DM were below recommended levels for either TC or LDL-C. More effective lipid-lowering strategies may be needed to achieve optimal TC and LDL-C levels in high-risk patients.

PCV14

INDIRECT TREATMENT COMPARISON AND ECONOMIC EVALUATION OF NOVEL ORAL ANTICOAGULANTS FOR THE PREVENTION OF STROKE IN PATIENTS WITH ATRIAL FIBRILLATION IN THE NETHERLANDS

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OBJECTIVES: Management with vitamin K antagonists (VKAs) has been an effective and cost-effective strategy for stroke prevention in atrial fibrillation (AF) but is associated with shortcomings. Novel oral anticoagulants (NOACs) were developed with the aims of no monitoring requirement and improved effectiveness and safety profiles. Economic evaluations require the comparison of all relevant options. However, there are no randomized controlled trials (RCTs) directly comparing these agents. In such cases, indirect treatment comparison (ITC) can be used to synthesize indirect comparative evidence. Through ITC-based evidence synthesis, the cost-effectiveness of all available NOACs for stroke prevention in AF patients may be evaluated. **METHODS:** ITC models were based on RCTs data comparing dabigratran, rivaroxaban, or apixaban with VKA treatment. Relative effectiveness was estimated for stroke/systemic embolism, intracranial hemorrhage, myocardial infarction, extracranial hemorrhage, and minor bleeding. A Markov model was developed using ITC-synthesized evidence with VKA as the baseline. Health utilities were collected from international sources whereas costs and mortality data were extracted from Dutch sources. Univariate and probabilistic sensitivity analyses (PSA) were conducted on the base-case incremental cost-effectiveness ratio (ICER). **RESULTS:** The ICERs for dabigatran, apixaban, and rivaroxaban compared to VKA were €12,146/QALY, €12,488/QALY, and €24,124/QALY, respectively. Sensitivity analysis using the upper and lower limits of the 95% confidence interval for absolute stroke risk with VKA treatment resulted in ICERs that varied drastically from dominance for VKA to being dominated by all NOACs. This is likely due to the large uncertainty observed between the baseline risk profiles of the VKA arms in the three RCTs. The options with the highest probabilities of cost-effectiveness in PSA were VKA at thresholds under €13,000/QALY and dabigatran or apixaban at thresholds above this mark. **CONCLUSIONS:** Dabigatran and apixaban were shown to be cost-effective options for AF patients in The Netherlands. However, these results were strongly influenced by uncertainty around stroke risk with VKA treatment.

PCV15

ESTIMATING THE CARDIOVASCULAR BENEFITS OF DPP-4 INHIBITORS: A SIMULATED STUDY

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OBJECTIVES: Outcomes trials are currently underway to establish the effects of DPP-4 inhibitors on major adverse cardiovascular events (MACE), but to-date no major clinical trial has published results. Using simulations, we evaluated the effectiveness of DPP-4 inhibitors in preventing MACE in two populations with type 2 diabetes, relative to the standard of care. **METHODS:** We used the Archimedes ARCHeS platform to simulate two clinical trials of virtual individuals with diagnosed type 2 diabetes (N=11,000 each). The DPP-4 class was modeled with a meta-analysis of HbA1c and weight change, pooling results from published trials. The study treatments were added-on to standard care. The first simulated trial examined subjects with elevated cardiovascular (CV) risk, based on established CV disease or multiple risk factors. The second considered individuals on metformin monotherapy with HbA1c ≥ 7%. We tracked changes in biomarkers and outcomes for 20 years. **RESULTS:** The DPP-4 class was associated with HbA1c drops of 0.66% [0.71% , 0.62%] in the elevated CV risk population and 0.71% [0.75%,0.67%] in the metformin add-on population; and a weight drop of 0.14 [0.36,-0.07] kg in both cohorts. The biomarker benefits produced a relative risk (RR) for MACE at 5 years of 0.977 [0.968, 0.986] and 0.962 [0.949, 0.975] for the elevated CV risk population and metformin add-on population, respectively. The number needed to treat to prevent one occurrence of MACE at 5 years was 327 [233,550] in the elevated CV risk population. **CONCLUSIONS:** Our simulated study suggests that DPP-4 inhibitors do not increase the risk of MACE relative to the standard of care in a population with elevated CV risk, and a representative diabetic metformin monotherapy population. This study provides insights on the long term benefits of DPP-4 inhibitors, and will support interpretation of the CV safety trial results likely to be published soon.

PCV16

INDIRECT COMPARISONS OF NOVEL ORAL ANTICOAGULANTS FOR THE PREVENTION OF STROKE IN PATIENTS WITH NONVALVULAR ATRIAL FIBRILLATION: A SYSTEMATIC LITERATURE REVIEW

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OBJECTIVES: Given the absence of head-to-head studies, this review summarized indirect treatment comparison studies of oral anticoagulants (OACs) for the prevention of stroke in patients with nonvalvular atrial fibrillation (NVAF). **METHODS:** Eligible English-language studies published up to May 31, 2013 were identified from electronic databases, Medline, EMBASE and Cochrane Library. Studies were included if the indirect comparison involved at least two OACs currently on the market with the common comparator warfarin. The search yielded ten published studies and one in press study was obtained. **RESULTS:** Eleven indirect comparison studies, based on data from three phase III (RE-LY, ROCKET-AF, and ARISTOTLE) and one phase II (PETRO) clinical trial, was reviewed. Six pairwise comparisons were reviewed across studies: any/all OACs vs. warfarin, apixaban vs. dabigatran 110mg, apixaban vs. dabigatran 150mg, apixaban vs. rivaroxaban, dabigatran 110mg vs. rivaroxaban, and dabigatran 110mg vs. rivaroxaban. OACs as a whole were found to have significantly better bleeding and efficacy endpoints when compared with warfarin. Apixaban and dabigatran 110mg were found to have significantly reduced risk of multiple bleeding endpoints when compared with rivaroxaban and dabigatran 150mg. Dabigatran 150mg was found to have significantly decreased risk of multiple efficacy endpoints when compared with rivaroxaban. Three studies compared discontinuation rates. Apixaban and rivaroxaban were found to have significantly lower discontinuation rates compared with both doses of dabigatran. Apixaban was also found to have a significantly lower discontinuation rate compared with rivaroxaban. **CONCLUSIONS:** Apixaban,