

# Gender differences in oral antiplatelet treatment use – results from a nationwide cohort study of acute coronary syndrome patients in Finland

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## Background

Secondary preventive drug therapy following acute coronary syndrome (ACS) is recommended to reduce the risk of new cardiovascular events, irrespective of gender. However, gender differences have been reported to occur in the actual management of patients with ACS. In addition, despite that women have been shown to have lower ACS incidence, mortality is higher among women after these events.

## Purpose

The aim of the present study was to describe management of secondary preventive medication divided by gender, with special focus on P2Y12 inhibitors (clopidogrel, prasugrel and ticagrelor), after an ACS event in an outpatient setting in Finland.

## Methods

This observational cohort study linked patient-level data on diagnoses, interventions and hospitalization periods from the Finnish Care Register for Health Care, and dispensed prescriptions and certain special reimbursement statuses from the Prescription Register. In order to interpret the gaps in drug exposure and persistence with treatment, data for institutionalization periods other than hospitalization (Care Register for Social Welfare), for living abroad (places of domicile) and for possible mortality (Statistics Finland) were also acquired from the authorities.

The included patients had to be hospitalized for unstable angina pectoris (UAP) (ICD-10 I20.0) or acute myocardial infarction (MI; ICD-10 I21) during the years 2009 to 2013. Index was defined as first ACS event during the observation period. Patients were classified as either OAP-treated or non-OAP-treated patients based on their drug purchases within seven days after discharge from hospital. Patients were analysed based on gender.

Data on co-morbidity status was retrieved for the five years prior to the index event.

Differences between women and men were tested with chi-squared test; odds ratio (OR) for initiation and hazard ratio (HR) for persistence with 95% confidence intervals (CI) were calculated with multivariate logistic regression and Cox regression, respectively.

## Results

Overall, 54,416 patients could be included in the present study, 21,644 (40%) were women and 32,772 (60%) were men. The most common inclusion event was non-ST-elevation MI (non-STEMI), seen in 58% of the women and 50% of the men,  $p < 0.001$ . An ST-elevation MI (STEMI) was the recorded ACS event for 22% of the women and 30% of the men ( $p < 0.001$ ).

Invasive treatment of the ACS event was performed more often for men than for women, with 43% of the women and 63% of the men receiving invasive treatment ( $p < 0.001$ ). Women were older (mean 77 vs. 69 years,  $p < 0.001$ ) and had more reported comorbidities (Table 1).

Only 39% of the women in this study filled a P2Y12 inhibitor prescription after discharge compared to 55% of the male ACS patients (OR 0.8, 95% CI 0.78-0.86,  $p < 0.001$ ). In addition to less antiplatelet treatment, women also had less often other secondary preventive drugs in their regimen at discharge than had the men. Women were further slightly more likely to also discontinue their P2Y12 inhibitor use within 12 months after the ACS event (HR 1.05; 95% CI 1.00-1.09,  $p = 0.039$ ) than the men (Figure 1 and 2).

## Conclusions

Female ACS patients were older and had more underlying comorbid diseases, such as atrial fibrillation. Accordingly, women received less invasive treatment and secondary preventive drug therapy compared to the men in the present study. However, female gender was an independent variable associated with lower initiation of P2Y12 inhibitors following an ACS event, with less than 40% of the women discharged with guideline recommended P2Y12 treatment.

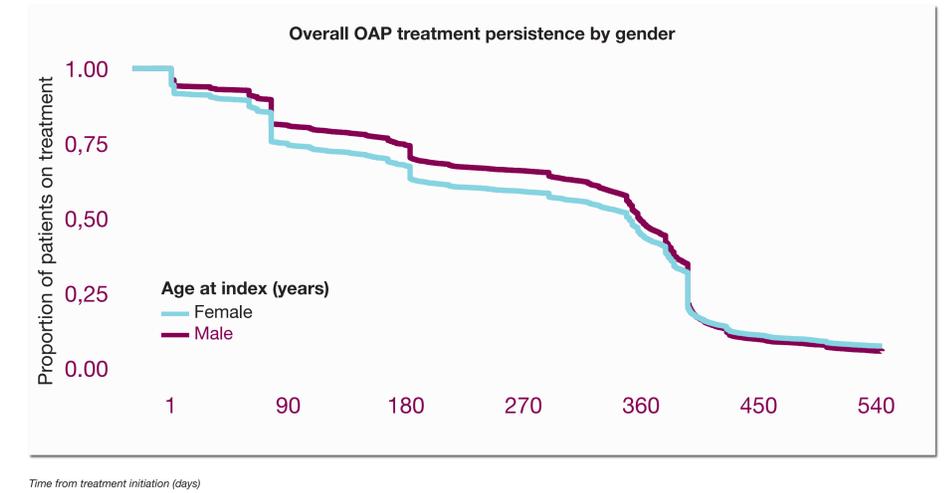
**Table 1.**

Baseline data. All data given as number (%) if not stated otherwise.

	Female, n=21,644	Male, n=32,772
Age, mean (SD), years	77.2 (11.6)	68.8 (12.4)
NSTEMI	12602 (58.2)	16419 (50.1)
STEMI	4705 (21.7)	9802 (29.9)
Unstable angina pectoris	4337 (20.0)	6551 (20.0)
Angiography	7879 (36.4)	17040 (52.0)
PCI	5414 (25.0)	13462 (41.1)
Comorbidity		
Previous MI	1364 (6.3)	1745 (5.3)
Previous unstable angina pectoris	513 (2.4)	807 (2.5)
Heart failure	2709 (12.5)	2355 (7.2)
Stroke (total)	1738 (8.0)	2009 (6.1)
Diabetes mellitus	5665 (26.2)	7779 (23.7)
Dementia/Alzheimer's disease	1152 (5.3)	712 (2.2)
Cancer	1249 (5.8)	2041 (6.2)
Drugs at discharge		
P2Y12 inhibitors, all	8519 (39.4)	17980 (54.9)
Clopidogrel	7863 (36.3)	16114 (49.2)
Prasugrel	202 (0.9)	715 (2.2)
Ticagrelor	454 (2.1)	1151 (3.5)
Statins	14756 (68.2)	26754 (81.6)
Beta-blockers	17306 (80.0)	27345 (83.4)
ACE inhibitor	8773 (40.5)	16488 (50.3)
ARB	5169 (23.9)	6186 (18.9)

**Figure 1**

Overall P2Y12 persistence by gender.



**Figure 2**

Persistence to specific type of P2Y12 inhibitor by gender; a) men, and b) women.

