# ACSIS 2018

## Acute Coronary Syndrome Israeli Survey
## March-April 2018

# SURVEY FINDINGS

# AND

# TEMPORAL TRENDS

# 2008 - 2018

The Working Group on
Intensive Cardiac Care
of the Israel Heart Society

The Israel
Heart Society

The Israeli Center for
Cardiovascular
Research

The Israeli Center for
Disease Control, the
Ministry of Health

# Booklet ACSIS 2018

June 2020

# Contents

# Contents

# Introduction

We are proud to present you with the ACSIS 2018 survey results. This survey, is a biennial tradition since it was launched in 1992 by Prof. Shlomo Behar.

The ACSIS survey provides a state-of-the-art representation of the characteristics, management, and outcome of patients presenting with an acute coronary syndrome (ACS) in Israel. This survey is a source of pride for the Israeli cardiology community.

ACSIS 2018 was carried out during March-April 2018 by the Israeli working group on Acute Cardiac Care of the Israel Heart Society, and the Israeli Center for Cardiovascular Research (ICCR) in cooperation with the Israeli Center for Disease Control (ICDC) and Israel Society of Intensive Care Nursing.

During this 2-month period, detailed data was collected in all intensive cardiac care units (ICCU) and cardiology wards in all public hospitals in Israel, and included 1778 consecutive ACS patients admitted and diagnosed with ACS.

The ACSIS 2018 findings expand on prior surveys by showing a continuous improvement in in-hospital, 1 month, as well as 1-year mortality throughout the last decade.

ACSIS data is used continuously for high-quality scientific research which is published in the major journals in the field.

We thank the Israeli Center for Disease Control (ICDC) as well as the pharmaceutical industry in their continuing support of this important survey.

Finally, we would like to thank and recommend the dedication of all the study coordinators and staff members of all CCU's and Cardiology wards for their dedicated time and effort in collecting the data.

| Dr. Roy Beigel | Dr. Katia Orvin |
|---|---|
| Chairman | Secretary |

*Israeli working-group on Acute Cardiac Care*

# Message from the Israeli Heart Society

The Israel Heart Society is proud to present the final results of the ACSIS 2018 survey.

ACSIS is a biannual survey conducted over a 2 months period in all coronary care units operating in Israel and includes all ACS patients admitted during the survey period. The survey has been conducted since 2000. Over this long period it has provided invaluable insights into the characteristics, management and outcome of our patients. The survey allows benchmarking for individual centers, has produced numerous scientific papers and allows important analyses of long term trends in ACS.
The 2018 ACSIS survey follows in the footsteps of previous surveys and extends the observations yet more. The data presented here are of great interest to anyone interested in the epidemiology and management of ACS in Israel and globally. We would like to thank the ACSIS steering committee, led by the ACC WG for their very thorough work in organizing this survey and preparing the data for presentation and for our many industry partners who supported this great effort.

We trust you will find these data important and interesting.

| Prof. Doron Zahger | Dr. Arik Wolak |
|---|---|
| President | Secretary General |

*The Israel Heart Society*

The ACSIS 2018 survey was generously supported by an unrestricted grant by the following companies:

# Chapter 1: Acute Coronary Syndrome in Cardiology

## 1.1 Distribution of Patients with ACS by ECG on Admission

Figure 1.1: Distribution of Patients with ACS by ECG on Admission
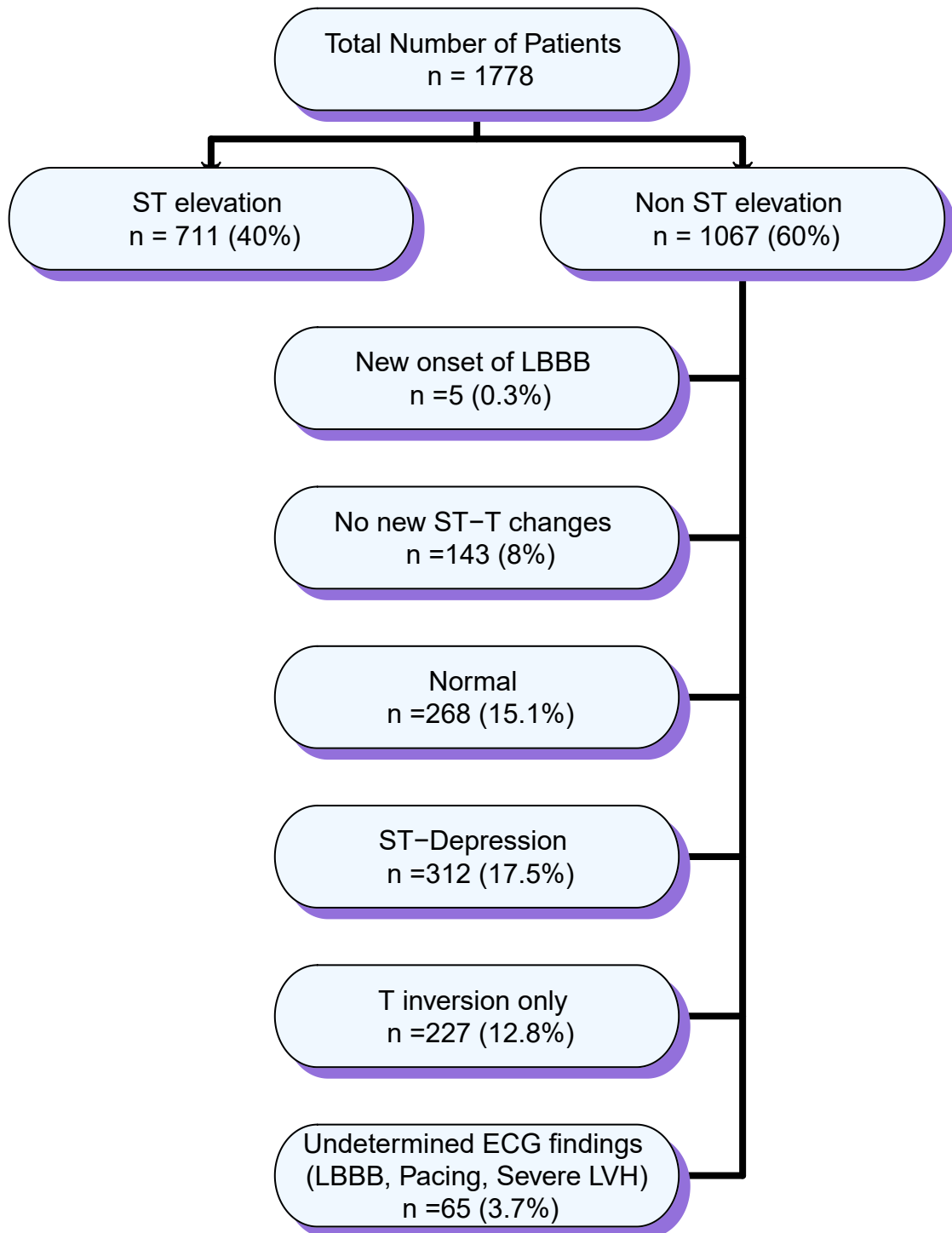
## 1.2 Demographic Characteristics

### 1.2.1 Age Distribution by ECG on Admission

Patients with ST elevation were younger (mean age: $62.5 \pm 12.9$) than those with non-ST elevation (mean age: $65.5 \pm 12.4$), and the age distribution of patients with ST elevation indicated a greater proportion of younger patients (58.1% were aged < 65 years) than that of patients with non-ST elevation (48.1% aged < 65 years).

Table 1.1: Age Distribution by ECG on Admission

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 | |
| Age groups (%) | | | | <0.001 |
| < 50 | 224 (12.6) | 108 (10.1) | 116 (16.4) | |
| 50-64 | 700 (39.4) | 405 (38.0) | 295 (41.7) | |
| 65-79 | 612 (34.5) | 400 (37.5) | 212 (29.9) | |
| ≥ 80 | 239 (13.5) | 154 (14.4) | 85 (12.0) | |
| Age (mean(sd)) | 64.28 (12.69) | 65.46 (12.44) | 62.51 (12.86) | <0.001 |

Percentages are calculated out of available data

Figure 1.2: Age Distribution by ECG on Admission
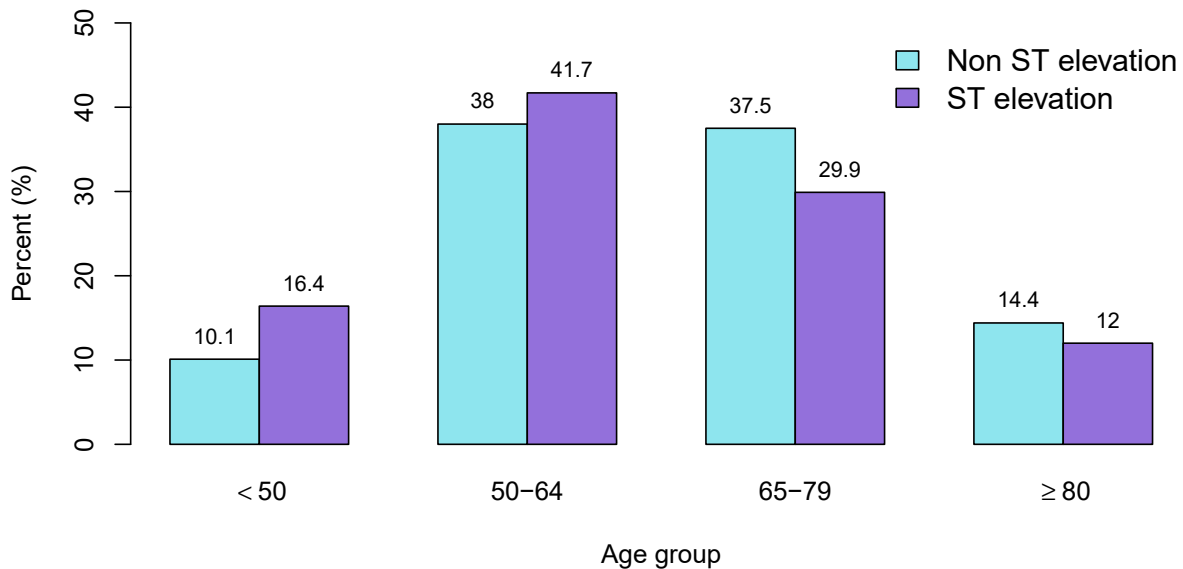
**1.2.2 Age Distribution by Gender**

The age distribution of male patients was significantly different from that of female patients. The majority of men (56.4%) were in the younger age groups ($< 65$) and only 10.2% were aged 80 or above. 14.5% of men were less than 50 years old. By contrast, the majority of the female patients were in the older age groups $\geq 65$ (65.7%). The number of women under the age of 50 was significantly less than of their male counterparts (4.9%), and 26.6% were aged 80 or above.

Table 1.2: Age Distribution by Gender

|  | Total | Women | Men | p-value |
|---|---|---|---|---|
| n | 1778 | 351 | 1427 | |
| Age groups (%) | | | | <0.001 |
| < 50 | 224 (12.6) | 17 ( 4.9) | 207 (14.5) | |
| 50-64 | 700 (39.4) | 103 (29.4) | 597 (41.9) | |
| 65-79 | 612 (34.5) | 137 (39.1) | 475 (33.3) | |
| ≥ 80 | 239 (13.5) | 93 (26.6) | 146 (10.2) | |
| Age (mean(sd)) | 64.28 (12.69) | 70.19 (12.06) | 62.83 (12.42) | <0.001 |

Percentages are calculated out of available data



Figure 1.3: Age Distribution by Gender
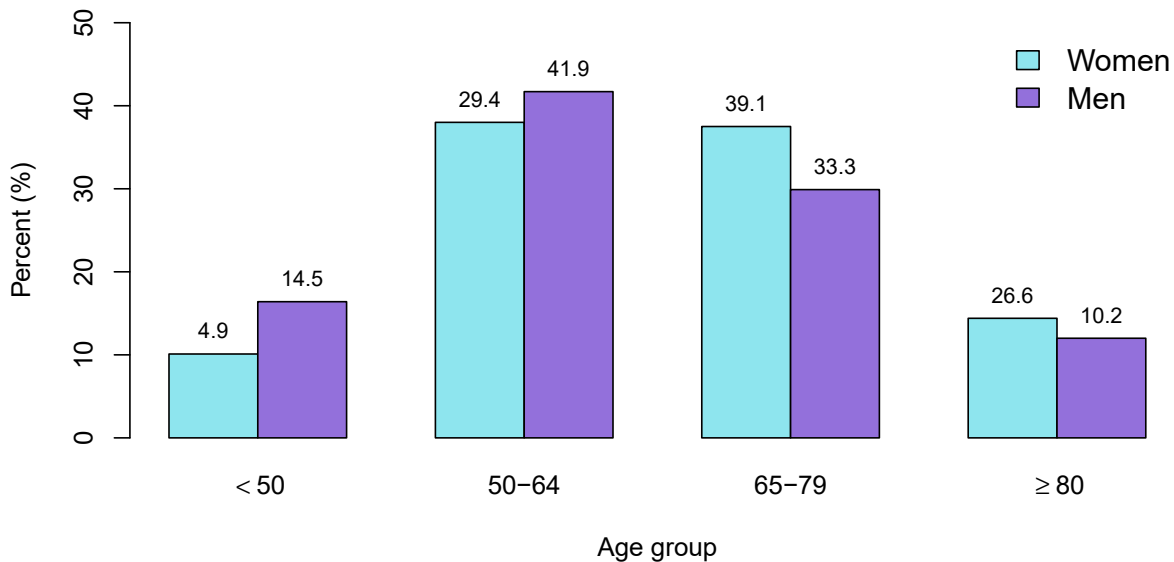
**1.2.3 Gender Distribution**

For both ST and non-ST segment elevation ACS we observed clear male predominance.

Table 1.3: Gender Distribution

|            | Total       | Non ST elevation | ST elevation | p-value |
|------------|-------------|------------------|--------------|---------|
| n          | 1778        | 1067             | 711          |         |
| Women (%)  | 351 (19.7)  | 228 (21.4)       | 123 (17.3)   | 0.040   |
| Men (%)    | 1427 (80.3) | 839 (78.6)       | 588 (82.7)   |         |

Percentages are calculated out of available data

Figure 1.4: Gender Distribution
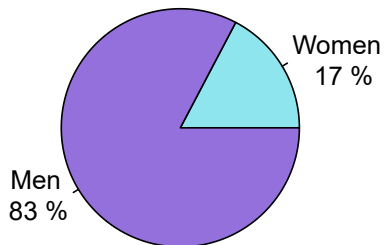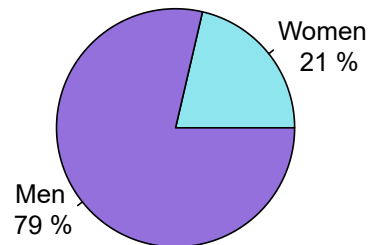
## 1.3 Cardiovascular History

### 1.3.1 Cardiovascular History

A history of ACS, cardiomyopathy, heart failure (CHF), chronic renal failure, PAD and atrial fibrillation was significantly more frequent among patients with non-ST elevation ACS. Similarly, more patients with non-ST elevation MI had undergone percutaneous interventions (PCI) or coronary artery bypass grafting (CABG) prior to hospitalization.

Table 1.4: Prior Cardiovascular History

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 |  |
| ACS (%) | 690 (38.8) | 492 (46.2) | 198 (27.8) | <0.001 |
| CABG (%) | 162 ( 9.1) | 135 (12.7) | 27 ( 3.8) | <0.001 |
| PCI (%) | 624 (35.2) | 435 (40.9) | 189 (26.6) | <0.001 |
| Cardiomyopathy (%) | 144 ( 8.1) | 108 (10.2) | 36 ( 5.1) | <0.001 |
| CHF (%) | 184 (10.4) | 140 (13.2) | 44 ( 6.2) | <0.001 |
| Chronic renal failure (%) | 203 (11.4) | 148 (13.9) | 55 ( 7.7) | <0.001 |
| PAD (%) | 139 ( 7.8) | 105 ( 9.9) | 34 ( 4.8) | <0.001 |
| Stroke/TIA (%) | 164 ( 9.2) | 100 ( 9.4) | 64 ( 9.1) | 0.881 |
| COPD (%) | 108 ( 6.1) | 67 ( 6.3) | 41 ( 5.8) | 0.743 |
| Atrial fibrillation/Flutter (%) | 138 ( 7.8) | 97 ( 9.1) | 41 ( 5.8) | 0.013 |
| AICD/CRT implant (%) | 39 ( 2.2) | 32 ( 3.1) | 7 ( 1.0) | 0.007 |
| Any malignancy (%) | 120 ( 6.9) | 75 ( 7.2) | 45 ( 6.4) | 0.611 |
| Thyroid disease (%) | 89 ( 5.3) | 56 ( 5.6) | 33 ( 4.9) | 0.606 |

Percentages are calculated out of available data

Figure 1.5: Cardiovascular history
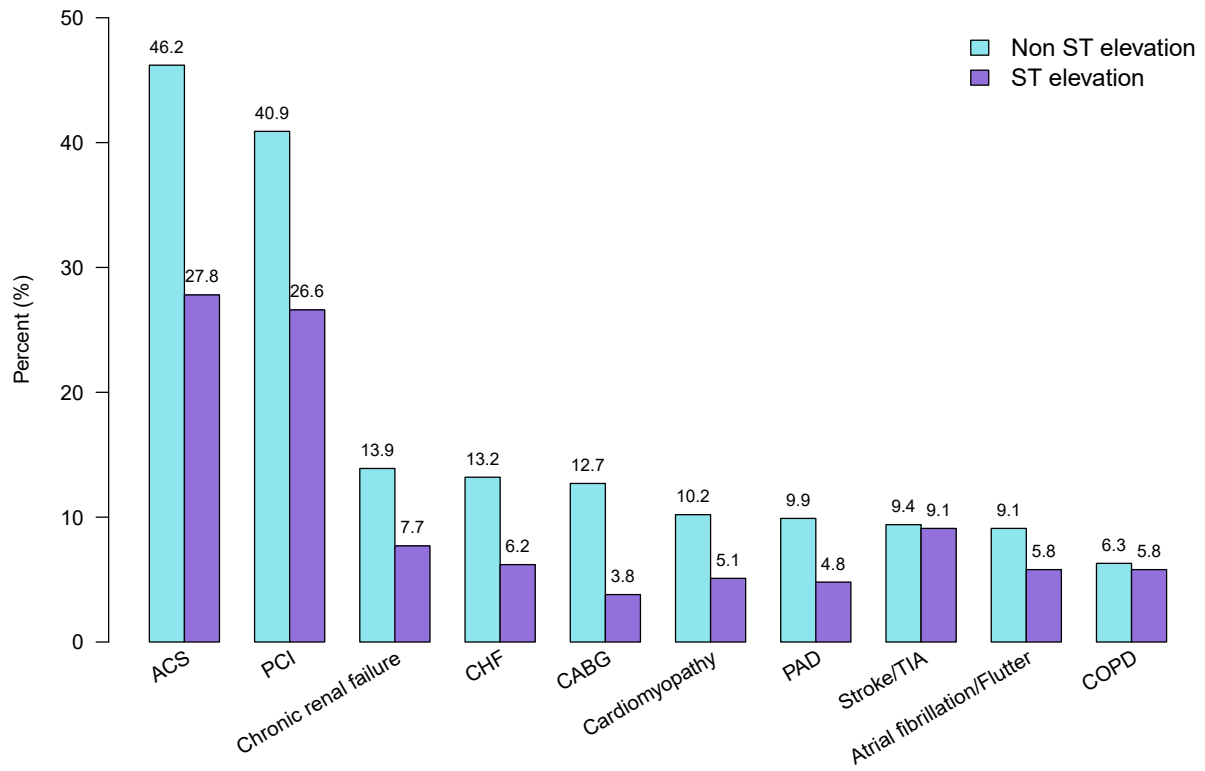
**1.3.2 Risk Factors**

Current smoking was more prevalent among patients presenting with ST-elevation ACS, while other risk factors were generally more prevalent among patients presenting with non-ST elevation ACS. The rates of newly diagnosed hypertension, diabetes and dyslipidemia were higher among those with ST-elevation. No difference was found in the prevalence of family history of coronary artery disease (CAD).

Table 1.5: Risk Factors

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 |  |
| Hypertension (%) | 1194 (67.3) | 783 (73.5) | 411 (58.0) | <0.001 |
| * Newly diagnosed (%) | 63 ( 5.2) | 30 ( 3.8) | 33 ( 7.9) | 0.004 |
| Diabetes (%) | 742 (41.8) | 490 (46.0) | 252 (35.5) | <0.001 |
| * Newly diagnosed (%) | 74 ( 9.8) | 41 ( 8.2) | 33 (12.9) | 0.049 |
| Dyslipidemia (%) | 1259 (71.0) | 801 (75.2) | 458 (64.6) | <0.001 |
| * Newly diagnosed (%) | 84 ( 6.6) | 29 ( 3.6) | 55 (11.9) | <0.001 |
| Current smoker (%) | 764 (43.0) | 404 (37.9) | 360 (50.6) | <0.001 |
| Past smoker (%) | 332 (18.7) | 228 (21.4) | 104 (14.6) | <0.001 |
| Family history of CAD (%) | 515 (34.0) | 300 (33.9) | 215 (34.1) | 0.982 |

Percentages are calculated out of available data

Newly diagnosed expressed as percentage of total patients with specific risk factor

Figure 1.6: Risk Factors
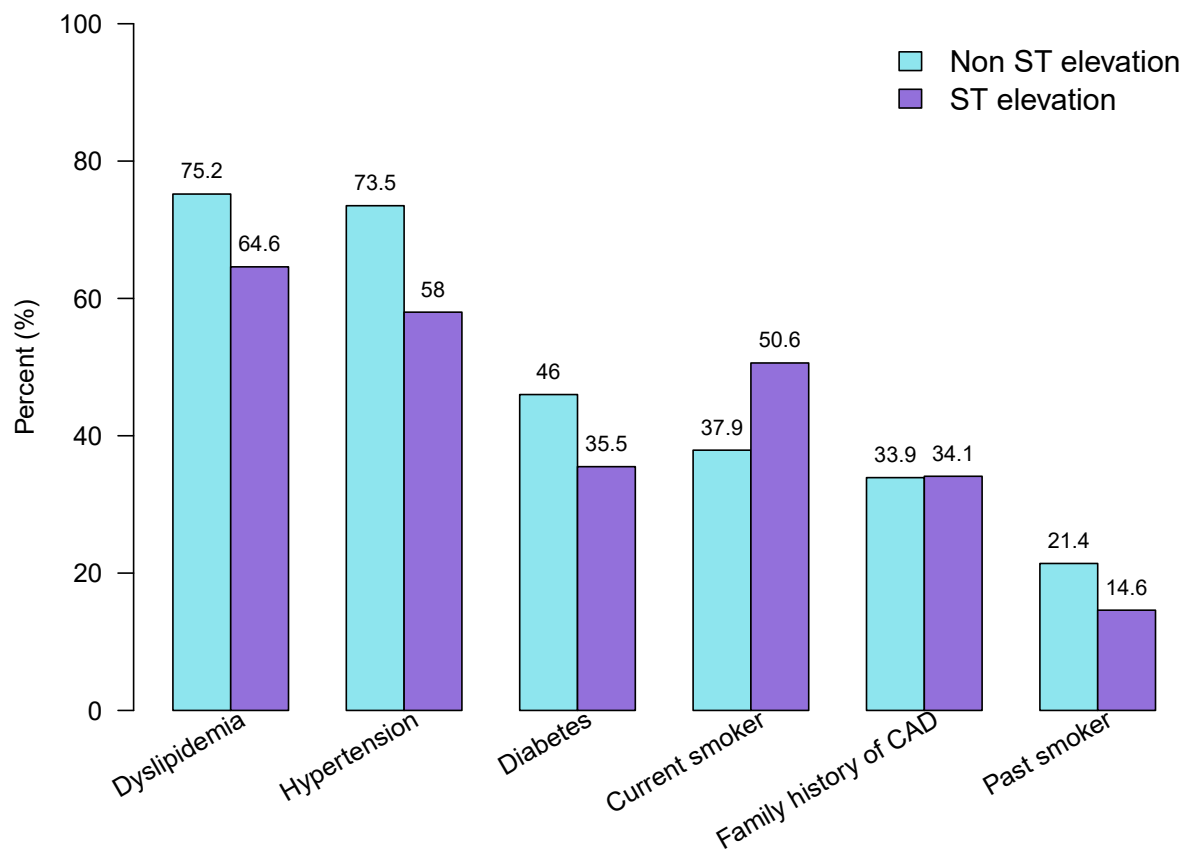
## 1.4 Prior Chronic Treatment

Prior to the index hospitalization, a higher proportion of patients with a non-ST elevation ACS (57%) were being treated with aspirin compared to those with ST elevation (38.3%). Other drugs in common use were ACE Inhibitors and ARB's, Beta Blockers, lipid-lowering drugs (primarily statins) and diuretics all of which were in use more frequently among patients presenting with non-ST elevation ACS. 19.8% of patients with non-ST elevation and 8.8% of those with ST elevation were being treated with clopidogrel.

Table 1.6: Prior Chronic Treatment

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 |  |
| **Anti-platelets** |  |  |  |  |
| Aspirin (%) | 732 (49.4) | 502 (57.0) | 230 (38.3) | <0.001 |
| Clopidogrel (%) | 190 (15.6) | 149 (19.8) | 41 ( 8.8) | <0.001 |
| Prasugrel (%) | 19 ( 1.6) | 6 ( 0.9) | 13 ( 2.6) | 0.049 |
| Ticagrelor (%) | 53 ( 4.5) | 37 ( 5.2) | 16 ( 3.4) | 0.175 |
| **Anticoagulants** |  |  |  |  |
| Oral anticoagulants[1](%) | 84 ( 8.2) | 63 (10.3) | 21 ( 5.1) | 0.005 |
| NOAC (%) | 65 ( 3.7) | 49 ( 4.6) | 16 ( 2.3) | 0.014 |
| Warfarin (%) | 19 ( 1.9) | 14 ( 2.4) | 5 ( 1.2) | 0.307 |
| Dabigatran (%) | 6 ( 0.6) | 5 ( 0.8) | 1 ( 0.3) | 0.456 |
| Rivaroxaban (%) | 18 ( 1.8) | 11 ( 1.9) | 7 ( 1.8) | 1.000 |
| Apixaban (%) | 41 ( 4.1) | 33 ( 5.5) | 8 ( 2.0) | 0.011 |
| LMWH (%) | 11 ( 1.1) | 7 ( 1.1) | 4 ( 1.0) | 1.000 |
| **Other** |  |  |  |  |
| ACE-I (%) | 415 (36.0) | 276 (41.6) | 139 (28.5) | <0.001 |
| ARB (%) | 272 (31.8) | 191 (36.5) | 81 (24.4) | <0.001 |
| ACE-I/ARB (%) | 681 (63.3) | 464 (68.7) | 217 (54.1) | <0.001 |
| Beta Blockers (%) | 555 (44.1) | 417 (54.0) | 138 (28.3) | <0.001 |
| CCB (%) | 315 (35.9) | 210 (39.6) | 105 (30.3) | 0.006 |
| Nitrates (%) | 62 ( 8.1) | 54 (11.8) | 8 ( 2.6) | <0.001 |
| Diuretics (%) | 191 (22.4) | 144 (28.0) | 47 (13.9) | <0.001 |
| Antihyperglycemic drugs[3] (%) | 443 (24.9) | 290 (27.2) | 153 (21.5) | 0.008 |
| Statins[4] (%) | 754 (67.8) | 531 (75.2) | 223 (54.9) | <0.001 |
| Ezetimibe (%) | 67 ( 9.0) | 49 (11.3) | 18 ( 5.8) | 0.013 |

[1] Oral anticoagulants include: Warfarin, Dabigatran, Rivaroxaban, Apixaban
[2] Antihyperglycemic drugs include: Glibenclamide, Glipizide, Glimepiride, Metformin, Sitagliptine, Saxagliptine, Vidagliptine, Linagliptine, Exenatide, Liraglutide, Dapagliflozine, Acarbose, Meglinitides, TZDs, Rosiglitazone
[3] Statins include: Simvastatin, Pravastatin, Atorvastatin, Rosuvastatin
[*] Percentages are calculated out of available data

Figure 1.7: Prior Chronic Treatment
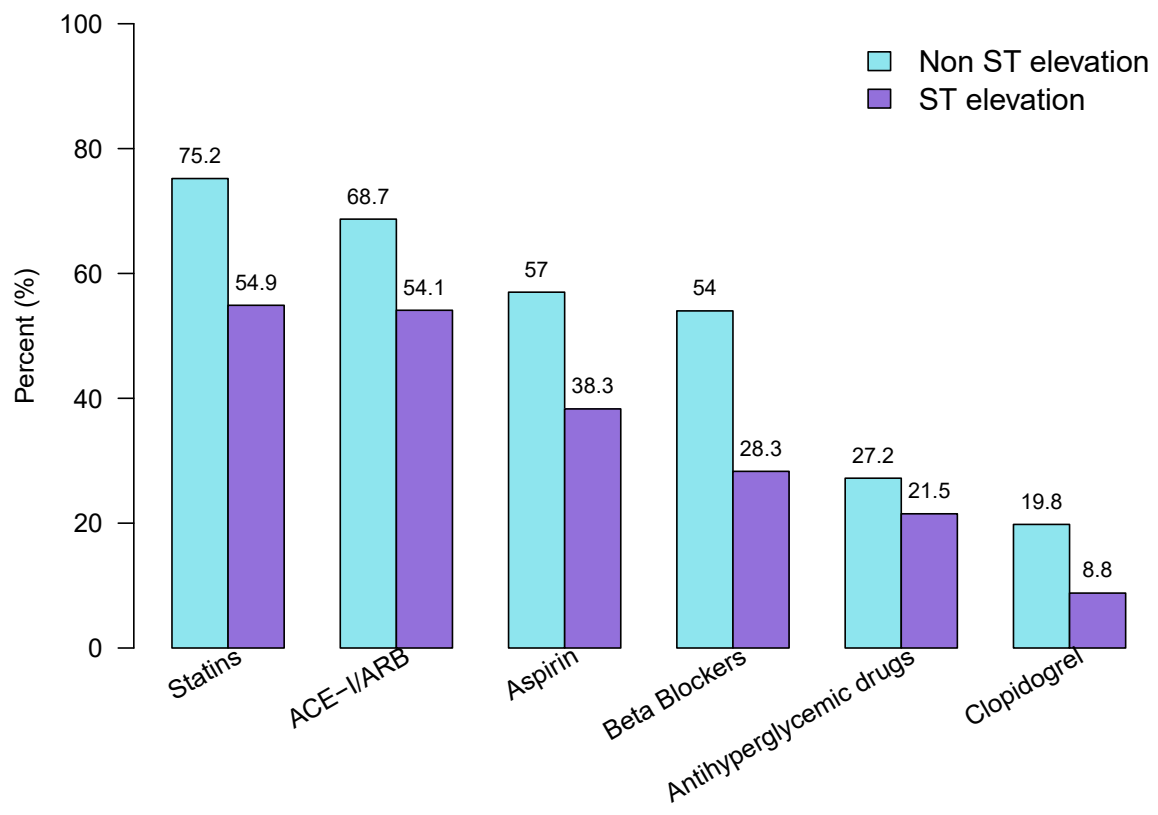
## 1.5 Transportation, Pre-Admission and Admission Information

### 1.5.1 Mode of Transportation by ECG on Admission

42.3% of all patients arrived at the hospital by means of private transportation. Patients with ST elevation were more frequently transported to hospital with mobile intensive care unit (MICU), and patients with non-ST elevation arrived more frequently by means of private transportation.

Table 1.7: Mode of Transportation by ECG on Admission

|  | Total | Non ST elevation | ST elevation |
|---|---|---|---|
| n[1] | 1670 | 988 | 682 |
| MICU (%) | 760 (45.5) | 325 (32.9) | 435 (63.8) |
| Private car/ independently (%) | 706 (42.3) | 520 (52.6) | 186 (27.3) |
| Regular ambulance (%) | 204 (12.2) | 143 (14.5) | 61 ( 8.9) |

p-value <0.001
[1] Excluded in-patients

Figure 1.8: Mode of Transportation by ECG on Admission
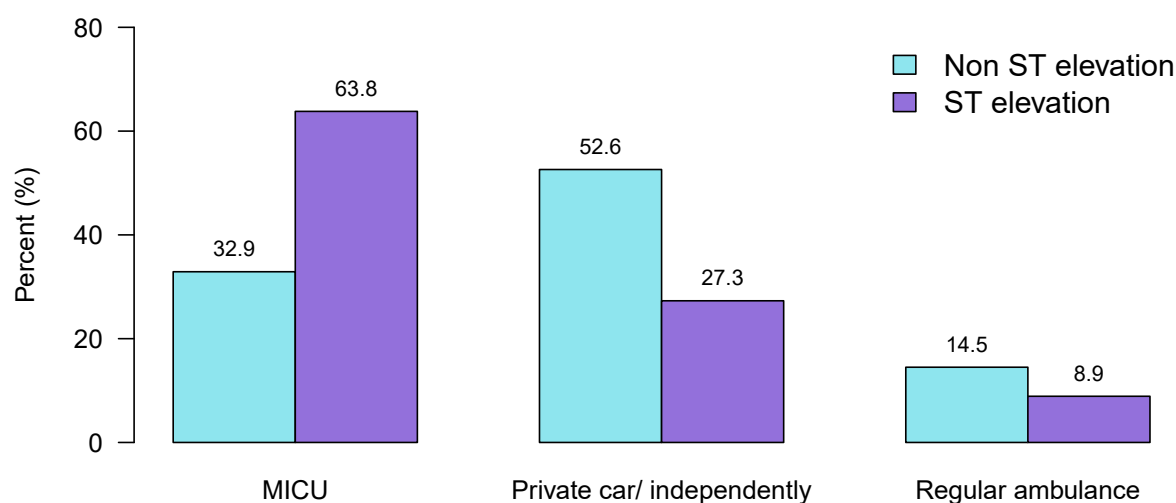
**1.5.2 Mode of Transportation by Gender**

45.5% of patients, both men and women, arrived by means of a MICU. Women were more frequently transported to hospital with regular ambulance and men arrived more frequently by means of private transportation.

Table 1.8: Mode of Transportation by Gender

|  | Total | Women | Men |
|---|---|---|---|
| n[1] | 1670 | 333 | 1337 |
| MICU (%) | 760 (45.5) | 151 (45.3) | 609 (45.5) |
| Private car/ independently (%) | 706 (42.3) | 124 (37.2) | 582 (43.5) |
| Regular ambulance (%) | 204 (12.2) | 58 (17.4) | 146 (10.9) |

p-value = 0.003
[1] Excluded in-patients

Figure 1.9: Mode of Transportation by gender
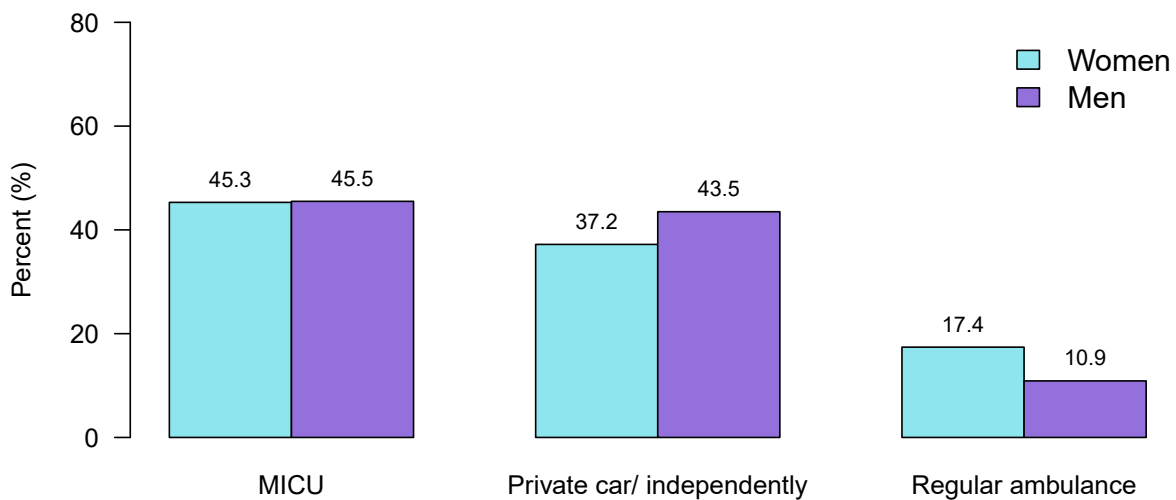
**1.5.3 Drugs administered at the Emergency Department (ED)**

Table 1.9: Drugs administered at the Emergency Department (ED)

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 |  |
| Aspirin (%) | 802 (45.1) | 543 (50.9) | 259 (36.4) | <0.001 |
| Clopidogrel (%) | 290 (16.3) | 235 (22.0) | 55 ( 7.7) | <0.001 |
| Prasugrel (%) | 89 ( 5.0) | 12 ( 1.1) | 77 (10.8) | <0.001 |
| Ticagrelor (%) | 269 (15.1) | 172 (16.1) | 97 (13.6) | 0.174 |
| Heparin (%) | 420 (23.6) | 193 (18.1) | 227 (31.9) | <0.001 |
| LMWH (%) | 224 (12.6) | 209 (19.6) | 15 ( 2.1) | <0.001 |



Figure 1.10: Drugs administered at the Emergency Department (ED)
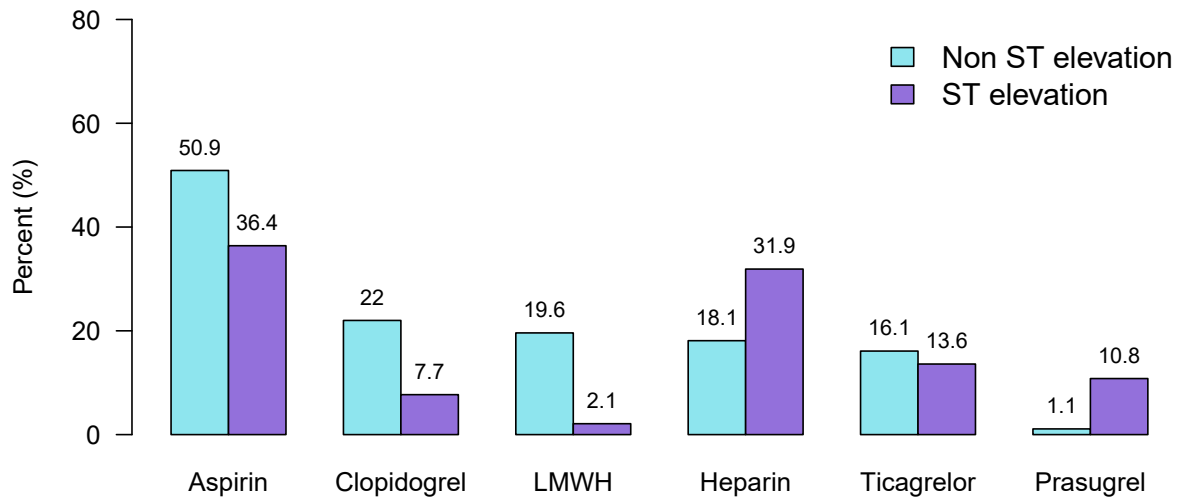
### 1.5.4 Ward of First Arrival by ECG on Admission

Most patients with ACS present to the Emergency Department (ED). However, a higher number of patients with an ST elevation ACS present directly to the cardiac care unit (CCU) and the catheterization laboratory than those with non-ST elevation ACS.

Table 1.10: Ward of First Arrival by ECG on Admission

|  | Total | Non ST elevation | ST elevation |
| --- | --- | --- | --- |
| n | 1778 | 1067 | 711 |
| Directly to cath laboratory (%) | 134 ( 7.5) | 7 ( 0.7) | 127 (17.9) |
| Directly to CCU (%) | 202 (11.4) | 23 ( 2.2) | 179 (25.2) |
| ED (%) | 1430 (80.4) | 1027 (96.3) | 403 (56.7) |
| Other (%) | 12 ( 0.7) | 10 ( 0.9) | 2 ( 0.3) |

Difference in ward of first arrival, ST elevation vs. non-ST elevation, p <0.001

### 1.5.5 First Ward of Hospitalization

As expected, the majority of patients presenting with ST elevation were hospitalized in the cardiac care unit (CCU) (92.5%). 39.9% of the patients who presented with non-ST elevation were admitted to the CCU and an additional 38.9% to a cardiology department, with the remaining 19.6% being admitted to internal medicine departments.

Table 1.11: First Ward of Hospitalization

|  | Total | Non ST elevation | ST elevation |
|---|---|---|---|
| n | 1778 | 1067 | 711 |
| Cardiology (%) | 448 (25.2) | 415 (38.9) | 33 ( 4.6) |
| CCU (%) | 1084 (61.0) | 426 (39.9) | 658 (92.5) |
| Chest pain unit (%) | 5 ( 0.3) | 5 ( 0.5) | 0 ( 0.0) |
| Internal medicine (%) | 221 (12.4) | 209 (19.6) | 12 ( 1.7) |
| Other (%) | 20 ( 1.1) | 12 ( 1.1) | 8 ( 1.1) |

Difference in first ward of hospitalization, ST elevation vs. non-ST elevation, p <0.001

Figure 1.11: First Ward of Hospitalization
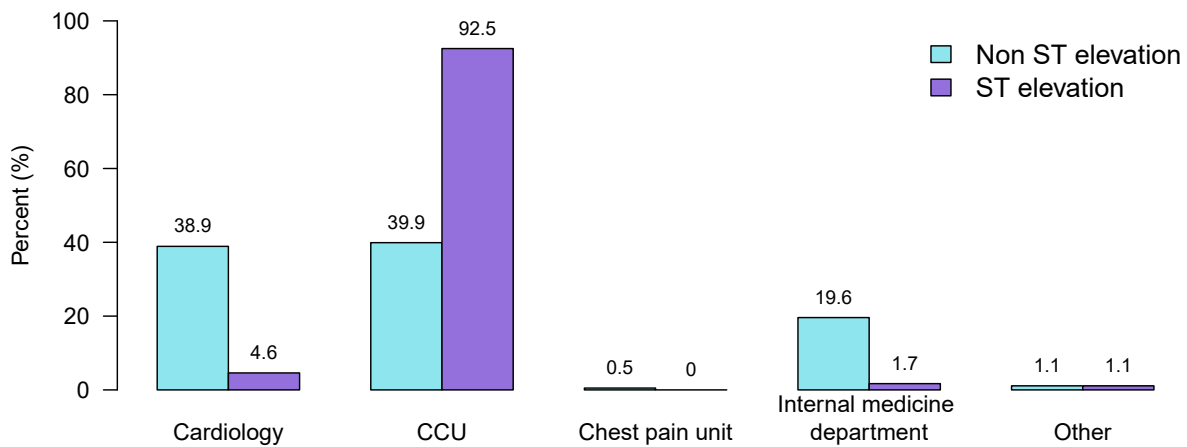
**1.5.6 Time from Symptom Onset to Hospital Arrival, by ECG on Admission**

All time frames were significantly shorter for patients with ST elevation. Patients with ST elevation sought help earlier when compared to patients with non-ST elevation.

Table 1.12: Time (minutes) from Symptom Onset to Admission, by ECG on Admission

| | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n[1] | 1164 | 632 | 532 | |
| Onset to first medical contact (median [IQR]) | 89.00 [36.50, 232.00] | 120.00 [44.25, 385.25] | 70.00 [34.00, 170.00] | 0.001 |
| First medical contact to arrival (median [IQR]) | 51.00 [35.00, 75.50] | 56.00 [37.00, 98.00] | 46.00 [32.75, 65.00] | <0.001 |
| Onset to arrival (median [IQR]) | 150.00 [90.00, 356.25] | 190.00 [105.00, 530.50] | 130.00 [84.00, 248.00] | <0.001 |

[1] Excluded in-patients or patients whose first medical contact was in ER

Figure 1.12: Median Length of Time from Symptom Onset to Admission (minutes)
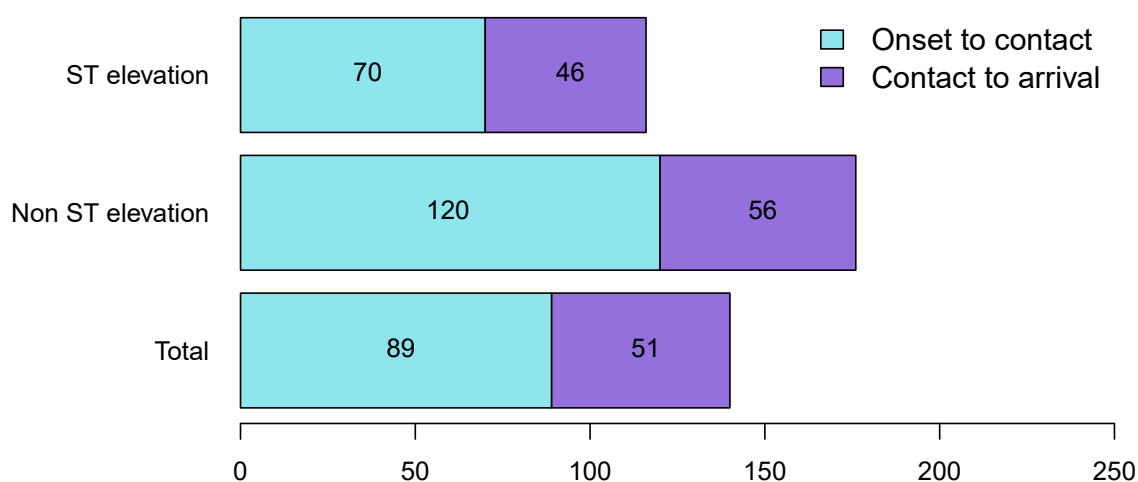
**1.5.7 Time from Symptom Onset to Hospital Arrival, by gender**

Men were more likely to seek help earlier than women. Men also arrived faster to the emergency room (ER) after seeking for help.

Table 1.13: Time (minutes) from Symptom Onset to Admission by gender

|  | Total | Women | Men | p-value |
|---|---|---|---|---|
| n[1] | 1164 | 245 | 919 | |
| Onset to first medical contact (median [IQR]) | 89.00 [36.50, 232.00] | 120.00 [42.00, 301.50] | 85.00 [35.00, 211.25] | 0.268 |
| First medical contact to arrival (median [IQR]) | 51.00 [35.00, 75.50] | 57.00 [37.00, 92.00] | 49.00 [34.00, 73.00] | 0.013 |
| Onset to arrival (median [IQR]) | 150.00 [90.00, 356.25] | 186.50 [96.00, 413.25] | 145.00 [90.00, 323.25] | 0.118 |

[1] Excluded in-patients or patients whose first medical contact was in ER

Figure 1.13: Median Length of Time from Symptom Onset to Admission (minutes)
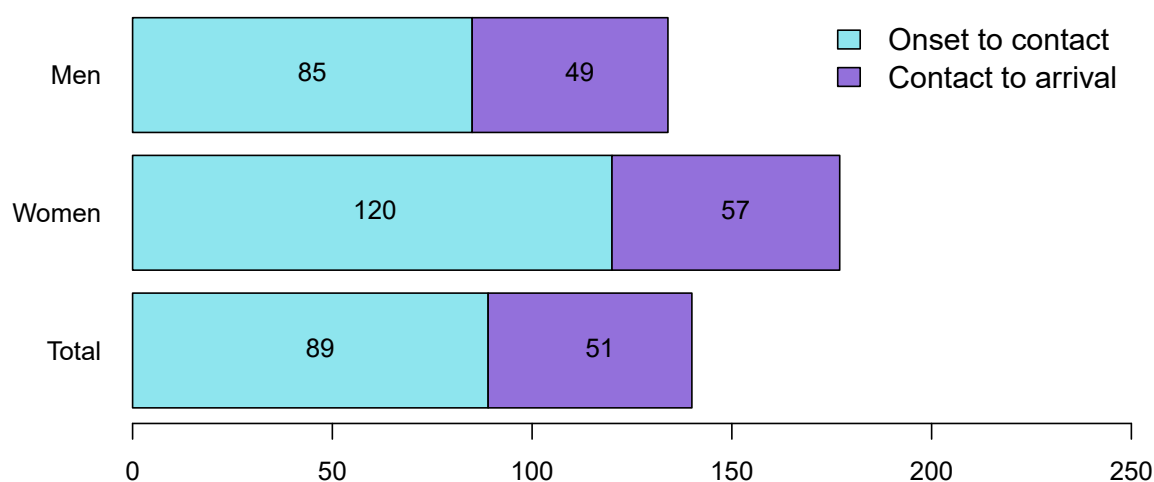
**1.5.8 First Medical Contact**

31.9% of patients had the first medical contact at the emergency room (ER) and about 31.7% at a primary clinic/"Moked". For an additional 23.6% the primary medical contact was with a mobile intensive care unit (MICU). Patients with ST elevation were more likely to have their first medical contact with a MICU (34.7%) than those with non-ST elevation (16.2%).

Table 1.14: First Medical Contact

|  | Total | Non ST elevation | ST elevation |
|---|---|---|---|
| n | 1778 | 1067 | 711 |
| ER (%) | 567 (31.9) | 400 (37.5) | 167 (23.5) |
| HMO Out Pts. clinic / Moked (%) | 564 (31.7) | 357 (33.5) | 207 (29.1) |
| Home visit (%) | 46 ( 2.6) | 24 ( 2.2) | 22 ( 3.1) |
| In-patient (%) | 47 ( 2.6) | 35 ( 3.3) | 12 ( 1.7) |
| MICU (%) | 420 (23.6) | 173 (16.2) | 247 (34.7) |
| Other hospital (%) | 26 ( 1.5) | 23 ( 2.2) | 3 ( 0.4) |
| Regular ambulance (%) | 108 ( 6.1) | 55 ( 5.2) | 53 ( 7.5) |

Difference in location of first medical contact, ST elevation vs. non-ST elevation, p <0.001

**1.5.9 Presenting Symptoms and Killip Class**

Typical angina was significantly more frequent in petients presenting with ST elevation (83.3%) than those presenting with non-ST elevation (77.1%). However, atypical chest pain was more common in patients presenting with non-ST elevation (14.1%) than in those with ST elevation (9%). Also dyspnea was more common in patients with non-ST elevation (33.6%) than those with ST elevation (17.9%)

Table 1.15: Presenting Symptoms at First Medical Contact

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 |  |
| Typical angina (%) | 1415 (79.6) | 823 (77.1) | 592 (83.3) | 0.002 |
| Atypical chest pain (%) | 214 (12.0) | 150 (14.1) | 64 ( 9.0) | 0.002 |
| Syncope (%) | 55 ( 3.1) | 21 ( 2.0) | 34 ( 4.8) | 0.001 |
| Aborted SCD (%) | 38 ( 2.1) | 12 ( 1.1) | 26 ( 3.7) | 0.001 |
| Palpitations (%) | 46 ( 2.6) | 41 ( 3.8) | 5 ( 0.7) | <0.001 |
| Dyspnea (%) | 485 (27.3) | 358 (33.6) | 127 (17.9) | <0.001 |
| Abdominal pain (%) | 105 ( 5.9) | 51 ( 4.8) | 54 ( 7.6) | 0.018 |

Figure 1.14: Killip Class on Admission
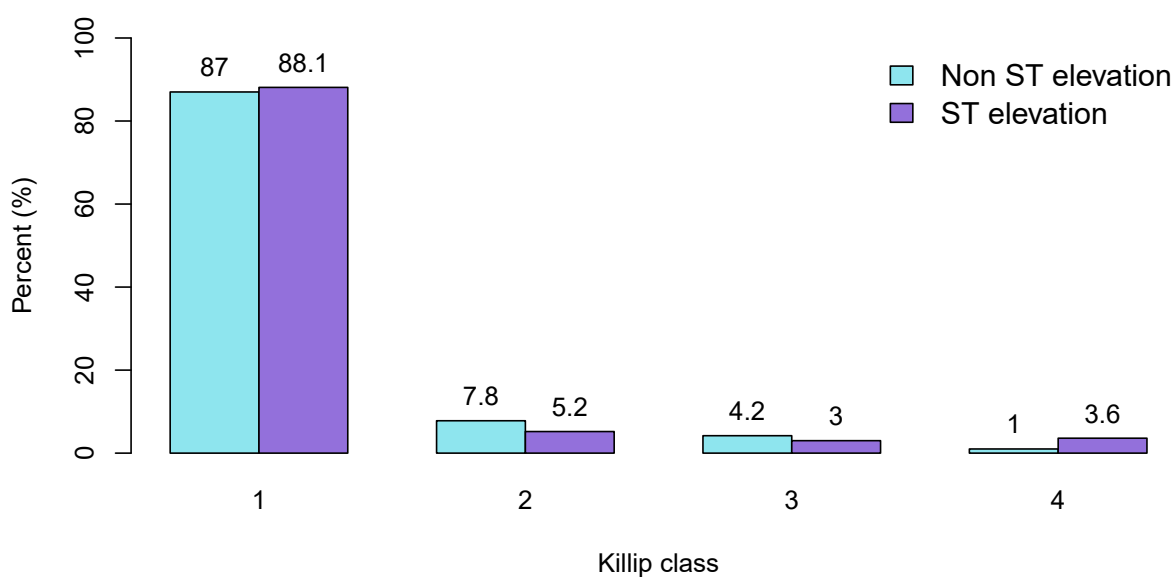
**1.5.10 Pre-Hospital Treatment (before ED arrival)**

At first medical contact, patients with ST elevation were significantly more likely to receive therapy with aspirin and heparin than patients with non-ST elevation.

Table 1.16 Pre-Hospitalization Treatment

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n[1] | 964 | 468 | 496 |  |
| Aspirin (%) | 552 (57.3) | 204 (43.6) | 348 (70.2) | <0.001 |
| Clopidogrel (%) | 7 ( 0.7) | 4 ( 0.9) | 3 ( 0.6) | 0.938 |
| Prasugrel (%) | 2 ( 0.2) | 1 ( 0.2) | 1 ( 0.2) | 1.000 |
| Ticagrelor (%) | 12 ( 1.2) | 4 ( 0.9) | 8 ( 1.6) | 0.441 |
| Heparin (%) | 287 (29.8) | 27 ( 5.8) | 260 (52.4) | <0.001 |
| LMWH (%) | 8 ( 0.8) | 3 ( 0.6) | 5 ( 1.0) | 0.785 |

[1] Only MICU and regular ambulance patients were included



Figure 1.15: Pre−Hospitalization Treatment
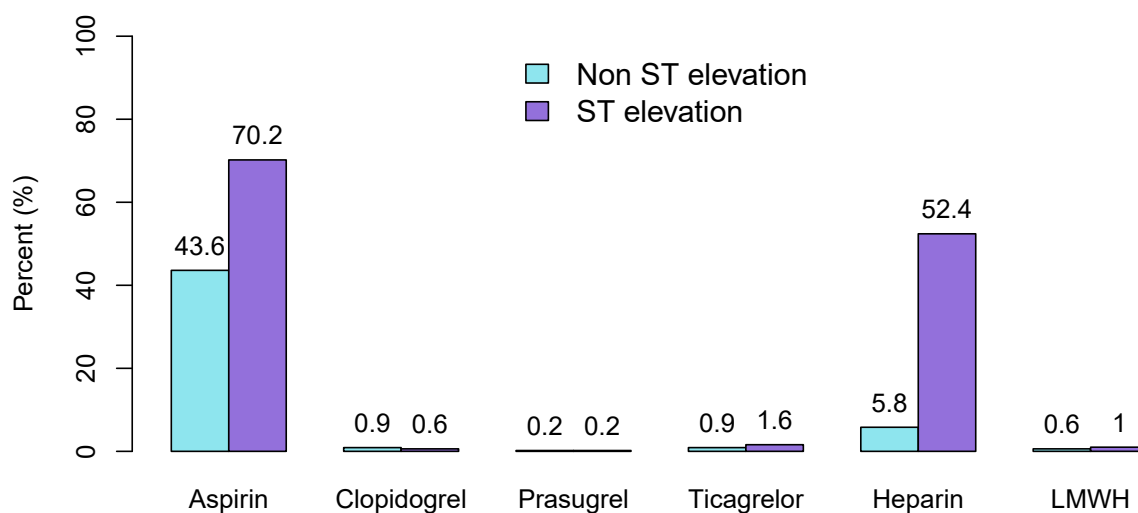
## 1.6 First Recorded ECG

### 1.6.1 Location of First ECG Recording

60.2% of patients presenting with non-ST elevation and 35% of patients presenting with ST elevation had their first ECG recorded in the emergency department (ED). With respect to the remaining patients, 39.9% of patients with ST elevation and 17.5% of those with non-ST elevation had the first ECG performed either at home or in an ambulance, and about 20% in both groups had it performed in a primary clinic.

Figure 1.16: Location of First ECG Recording
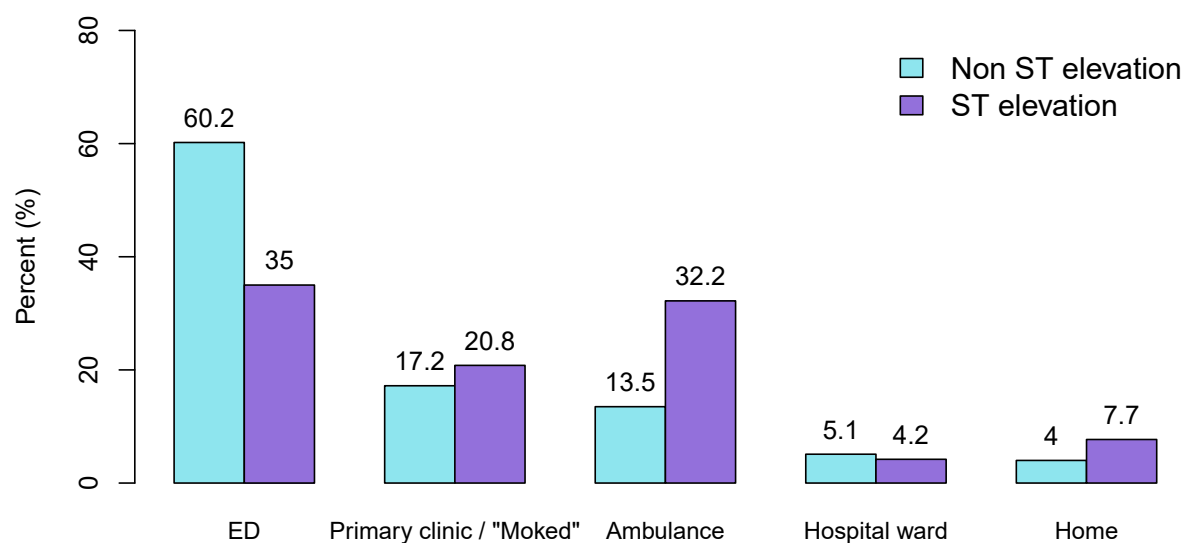
**1.6.2 First ECG Rhythm**

About 88% of patients, both with and without ST elevation, presented with a normal sinus rhythm (NSR). 2% of patients with ST elevation and 4.3% of those without ST elevation, presented with atrial fibrillation.

Table 1.18: First ECG Rhythm

|  | Total | Non ST elevation | ST elevation |
|---|---|---|---|
| n | 1778 | 1067 | 711 |
| NSR (%) | 1573 (88.5) | 946 (88.7) | 627 (88.2) |
| Atrial fibrillation (%) | 60 ( 3.4) | 46 ( 4.3) | 14 ( 2.0) |
| S.Tachycardia (%) | 48 ( 2.7) | 30 ( 2.8) | 18 ( 2.5) |
| S.Bradycardia (%) | 22 ( 1.2) | 11 ( 1.0) | 11 ( 1.5) |
| VT/VF (%) | 22 ( 1.2) | 7 ( 0.7) | 15 ( 2.1) |
| II/III AV Block (%) | 16 ( 0.9) | 1 ( 0.1) | 15 ( 2.1) |
| Asystole (%) | 2 ( 0.1) | 1 ( 0.1) | 1 ( 0.1) |
| Other (%) | 35 ( 2.0) | 25 ( 2.3) | 10 ( 1.4) |

Difference in first ECG rhythm, ST elevation vs. non-ST elevation, $p = <0.001$

## 1.7 Primary Reperfusion

### 1.7.1 Primary Reperfusion Therapy in Patients with ST Elevation

81% of patients with ST elevation underwent primary reperfusion within 12 hours from onset of symptoms, mainly primary PCI. In 93.3% of these cases, stents were deployed with 98% receiving drug eluting stents.

Figure 1.17: Primary Reperfusion in Patients with ST Elevation
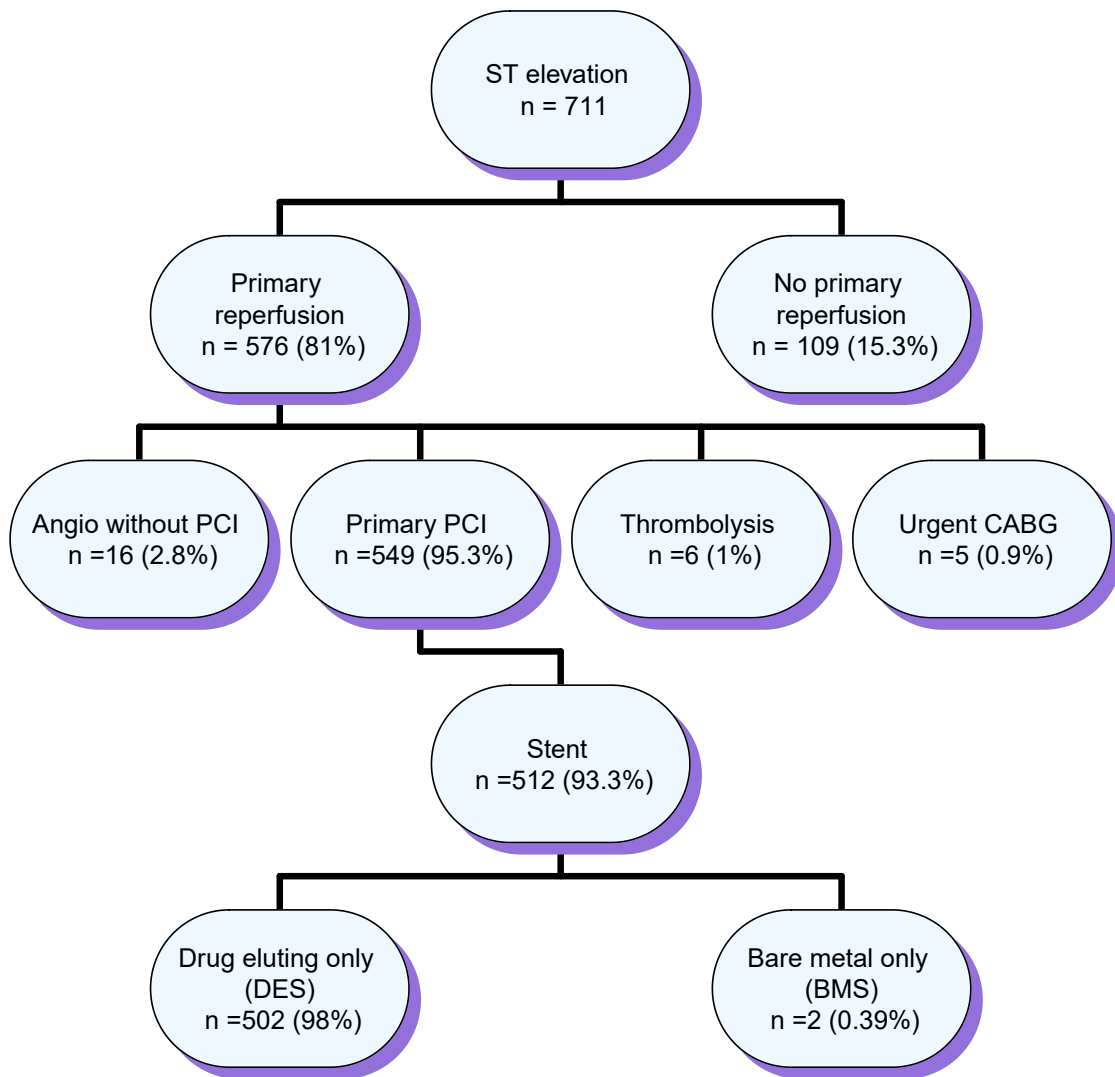
**1.7.2 Length of Time from Arrival to Primary Reperfusion**

The median time from arrival to primary reperfusion was less than one hour (49 munutes).

Table 1.19: Length of Time (minutes) from Arrival to Reperfusion

|  | N | Time in minutes (median [IQR]) |
|---|---|---|
| From arrival to reperfusion | 489 | 49.00 [26.00, 82.00] |
| From arrival to thrombolysis | 6 | 27.00 [23.25, 33.00] |
| From arrival to primary PCI | 465 | 49.00 [27.00, 82.00] |



Figure 1.18: Length of Time from Arrival to Reperfusion
(Median, 25%−75%)
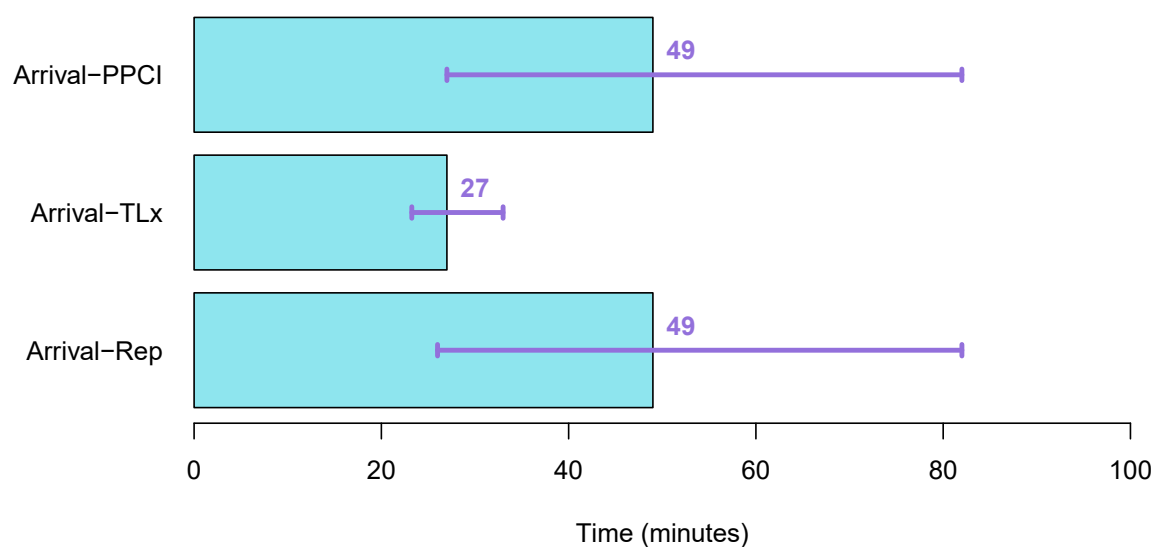
### 1.7.3 Length of Time from Arrival to Primary Reperfusion, by Gender

The time delay from arrival to primary reperfusion was shorter for men compared to women.

Table 1.20: Length of Time (minutes) from Arrival to Reperfusion, by gender

| | Women | | Men | | |
| --- | --- | --- | --- | --- | --- |
| | Time in minutes (median [IQR]) | N | Time in minutes (median [IQR]) | N | p-value |
| From arrival to reperfusion | 58.00 [28.00, 101.50] | 86 | 48.00 [25.00, 78.00] | 403 | 0.039 |
| From arrival to thrombolysis | NA [NA, NA] | 0 | 27.00 [23.25, 33.00] | 6 | NA |
| From arrival to primary PCI | 59.00 [29.00, 104.50] | 79 | 48.00 [26.00, 79.00] | 386 | 0.027 |



Figure 1.19: Length of Time from Arrival to Reperfusion by gender (Median, 25%–75%)
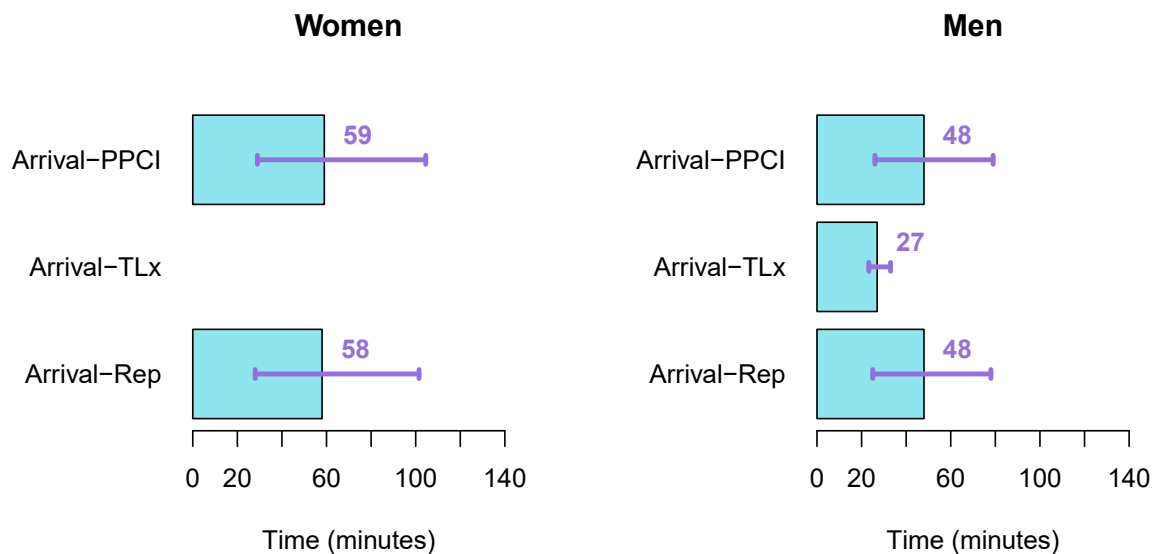
**1.7.4 Use of drugs and protective devices during Primary PCI**

Table 1.21: Drugs and Protective Devices during Primary Reperfusion

|  | Overall |
| --- | --- |
| n | 576 |
| IIb/IIIa antagonists (%) | 143 (24.8) |
| Bivalirudin (%) | 1 ( 0.2) |
| Aspiration device (%) | 58 (10.1) |

**1.7.5 Primary PCI/Angiography**

Table 1.21a: Vascular access during Primary Reperfusion

|  | Overall |
| --- | --- |
| n | 576 |
| Vascular access | |
|    Femoral | 114 (20.3) |
|    Radial | 438 (78.1) |
|    Both | 9 ( 1.6) |

**1.7.6 TIMI Grade Flow of IRA**

In 53.6% of cases, a TIMI flow grade of zero was observed on first injection to the Infarct Related Artery (IRA). Following revascularization, a TIMI grade flow of 3 was achieved in the majority of patients (90.4%).

Table 1.22: TIMI Grade Flow of IRA before and after revascularization

|  | Before revascularization (%) | After revascularization (%) |
| --- | --- | --- |
| n | 470 | 544 |
| 0 | 252 (53.6) | 17 ( 3.1) |
| 1 | 60 (12.8) | 8 ( 1.5) |
| 2 | 58 (12.3) | 27 ( 5.0) |
| 3 | 100 (21.3) | 492 (90.4) |

**1.7.7 Reasons for Not Performing Primary Reperfusion**

15.3% of patients presenting with ST elevation did not receive primary reperfusion therapy. In 27.1% the reason was spontaneous reperfusion, in 33.6% the reason was late arrival at the hospital, and in 18.7% of cases primary reperfusion was considered not indicated.

Figure 1.20: Reasons for Not Performing Primary Reperfusion
Number of Patients = 109
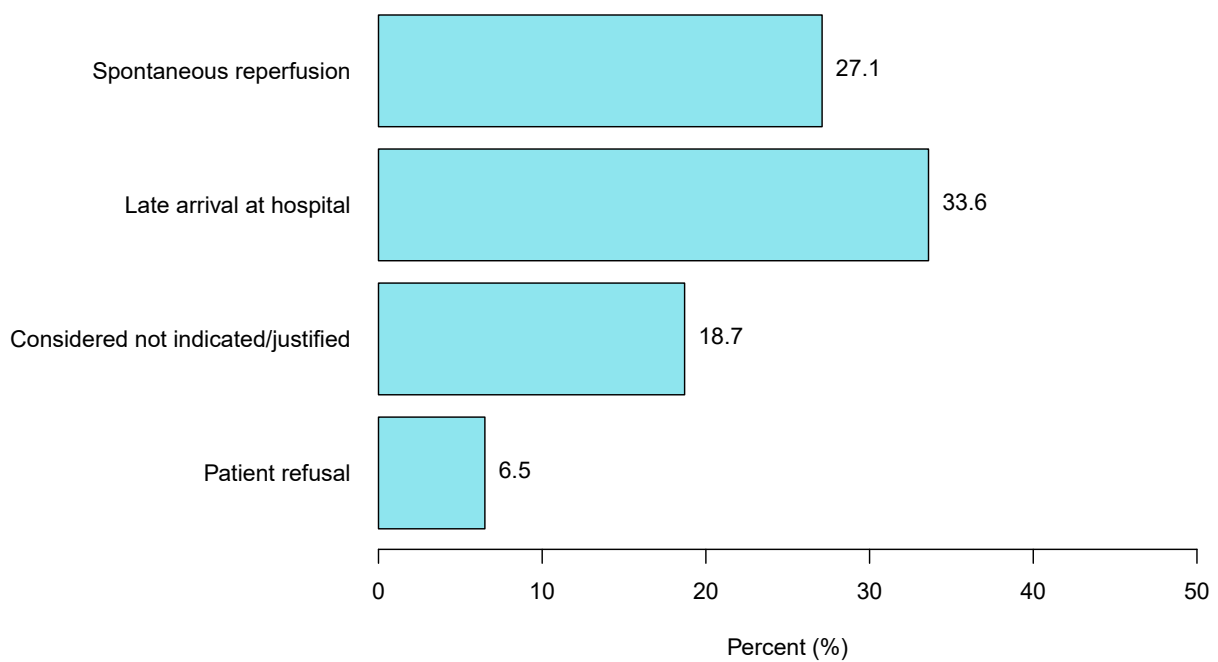


- There were no patients with contraindication to thrombolysis and no patient died before decision.

## 1.8 Coronary Interventions and Procedures during Hospitalization

### 1.8.1 Coronary Angiography and Interventions

Patients with ST elevation were more likely than those with non-ST elevation to undergo coronary angiography and PCI. CABG during hospitalization was performed more frequently in patients with non-ST elevation.

Figure 1.21: In−Hospital Cardiac Interventions and Procedures
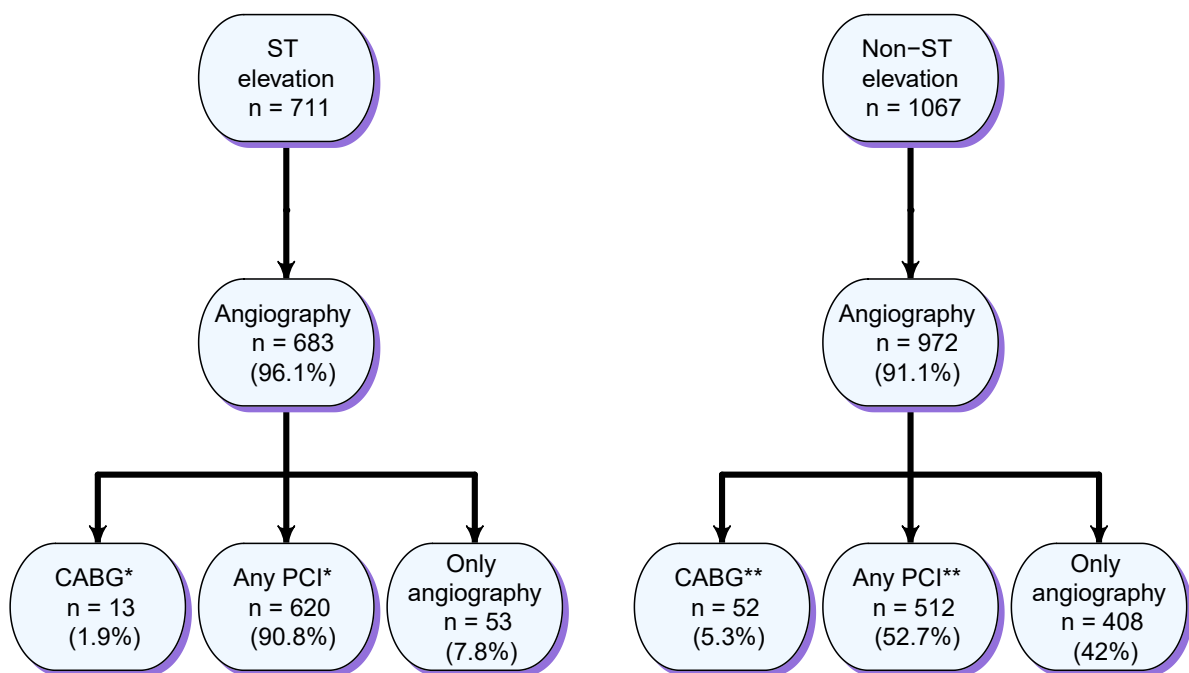


*3 patients underwent both CABG and PCI; ** 0 patients underwent both CABG and PCI.

### 1.8.2 Coronary angiography (*excluding primary PCI*)

Table 1.23: Vascular access during coronary angiography

|  | Overall |
|---|---|
| n | 1778 |
| Coronary angiography | 1167 (65.7) |
| Vascular access | |
| Femoral | 99 (11.9) |
| Radial | 710 (85.0) |
| Both | 26 ( 3.1) |

### 1.8.3 Other Procedures

97.2% of patients with ST elevation and 87.1% of those with non-ST elevation underwent echocardiography. Patients with ST elevation were more likely to receive resuscitation, DC shocks, mechanical ventilation, intra-aortic balloon counter pulsation (IABP) and temporary pacemakers than those with non-ST elevation.

Table 1.23a: Other Procedures

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 | |
| Echo (%) | 1619 (91.1) | 928 (87.1) | 691 (97.2) | <0.001 |
| DC shock (%) | 37 ( 2.1) | 15 ( 1.4) | 22 ( 3.1) | 0.023 |
| Resuscitation (%) | 36 ( 2.0) | 12 ( 1.1) | 24 ( 3.4) | 0.002 |
| Mechanical ventilation (%) | 62 ( 3.5) | 21 ( 2.0) | 41 ( 5.8) | <0.001 |
| IABP (%) | 35 ( 2.0) | 15 ( 1.4) | 20 ( 2.8) | 0.054 |
| Dialysis (%) | 25 ( 1.4) | 20 ( 1.9) | 5 ( 0.7) | 0.064 |
| AICD/CRT (%) | 8 ( 0.4) | 3 ( 0.3) | 5 ( 0.7) | 0.347 |
| Permanent pacemaker (%) | 9 ( 0.5) | 1 ( 0.1) | 8 ( 1.1) | 0.008 |
| Temporary pacemaker (%) | 17 ( 1.0) | 4 ( 0.4) | 13 ( 1.8) | 0.005 |
| Therapeutic Hypothermia (%) | 18 ( 1.0) | 6 ( 0.6) | 12 ( 1.7) | 0.037 |

## 1.9 Ejection Fraction

Ejection fraction (EF) was determined in 90.7% of patients with ST elevation and in 81.7% of those with non-ST elevation. EF was normal in a larger proportion of patients with non-ST elevation (59.5%) than in patients with ST elevation (36.4%). 27.3% of patients with ST elevation and 17.2% of patients with non-ST elevation presented with an EF < 40%.

Table 1.24: Ejection Fraction

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 | |
| EF determined (%) | 1512 (85.3) | 869 (81.7) | 643 (90.7) | <0.001 |
| EF (range) (%) | | | | <0.001 |
| Normal (≥ 50%) | 751 (49.7) | 517 (59.5) | 234 (36.4) | |
| Mild (40-49%) | 436 (28.8) | 203 (23.4) | 233 (36.2) | |
| Moderate (30-39%) | 233 (15.4) | 99 (11.4) | 134 (20.8) | |
| Severe (< 30%) | 92 ( 6.1) | 50 ( 5.8) | 42 ( 6.5) | |

*Note:*
EF range percentages are calculated out of EF determined patients only

## 1.10 In-Hospital Complications

Cardiogenic shock, ventricular fibrillation (VF), High degree $(2-3^0)$ AVB and Sepsis were more frequent in patients with ST elevation.

Table 1.25: In-Hospital Complications

| | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 | |
| CHF mild-moderate (Killip-2) (%) | 131 (7.4) | 77 (7.2) | 54 (7.6) | 0.838 |
| Pulmonary edema (Killip-3) (%) | 59 (3.3) | 36 (3.4) | 23 (3.2) | 0.976 |
| Cardiogenic shock (Killip-4) (%) | 55 (3.1) | 22 (2.1) | 33 (4.7) | 0.003 |
| Hemodynamically significant RV infarction (%) | 8 (0.5) | 2 (0.2) | 6 (0.8) | 0.096 |
| Re-MI (%) | 11 (0.6) | 5 (0.5) | 6 (0.8) | 0.498 |
| Post MI angina/re-ischemia (%) | 21 (1.2) | 13 (1.2) | 8 (1.1) | 1.000 |
| Stent thrombosis (definite/probable/possible) (%) | 5 (0.3) | 1 (0.1) | 4 (0.6) | 0.172 |
| Free wall rupture (%) | 2 (0.1) | 0 (0.0) | 2 (0.3) | 0.312 |
| Tamponade (%) | 3 (0.2) | 0 (0.0) | 3 (0.4) | 0.125 |
| MR Moderate-severe (%) | 15 (0.8) | 7 (0.7) | 8 (1.1) | 0.428 |
| Pericarditis (%) | 9 (0.5) | 3 (0.3) | 6 (0.8) | 0.195 |
| Sustained VT (>125 bpm) (%) | 19 (1.1) | 9 (0.8) | 10 (1.4) | 0.372 |
| VF (%) | 31 (1.7) | 7 (0.7) | 24 (3.4) | <0.001 |
| New AF (%) | 75 (4.2) | 37 (3.5) | 38 (5.3) | 0.071 |
| High degree (2-3) AVB (%) | 26 (1.5) | 8 (0.8) | 18 (2.5) | 0.004 |
| Asystole (%) | 36 (2.0) | 16 (1.5) | 20 (2.8) | 0.080 |
| TIA (%) | 5 (0.3) | 2 (0.2) | 3 (0.4) | 0.649 |
| Stroke (%) | 8 (0.5) | 4 (0.4) | 4 (0.6) | 0.829 |
| CVA/TIA in hospital (%) | 13 (0.7) | 6 (0.6) | 7 (1.0) | 0.460 |
| Acute renal injury (%) | 87 (4.9) | 47 (4.4) | 40 (5.6) | 0.295 |
| Sepsis (%) | 36 (2.0) | 15 (1.4) | 21 (3.0) | 0.036 |
| Major bleeding (%) | 49 (2.8) | 29 (2.7) | 20 (2.8) | 1.000 |
| Minor bleeding (%) | 41 (2.3) | 24 (2.3) | 17 (2.4) | 0.974 |
| Blood transfusions (%) | 39 (2.2) | 20 (1.9) | 19 (2.7) | 0.339 |

## 1.11 In-Hospital Medical Treatment

Prasugrel, llb/llla antagonists, warfarin, heparin (UFH), ACE-I, aldactone, PPI and IV inotropic agent were more frequently used in patients with ST elevation. Clopidogrel, ticagrelor, low molecular weight heparin (LMWH), fondaparinux, ARB, CCB and nitrates were more frequently used among patients with non ST elevation. Both groups of patients were equally treated with aspirin, NOACS, beta blockers, digoxin, amiodarone, diuretics, colchicine, steroids, insulin and statins.

Table 1.26: In-Hospital Medical Treatment

| | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 | |
| **Anti-platelets** | | | | |
| Aspirin (%) | 1674 (98.0) | 994 (97.7) | 680 (98.4) | 0.426 |
| Clopidogrel (%) | 741 (58.6) | 548 (67.7) | 193 (42.5) | <0.001 |
| Prasugrel (%) | 389 (35.6) | 89 (15.1) | 300 (59.8) | <0.001 |
| Ticagrelor (%) | 837 (64.5) | 534 (68.5) | 303 (58.6) | <0.001 |
| P2Y12 (%) | 1658 (98.1) | 976 (97.6) | 682 (98.8) | 0.097 |
| llb/llla antagonists (%) | 51 ( 5.3) | 17 ( 2.9) | 34 ( 9.0) | <0.001 |
| **Anticoagulants** | | | | |
| Oral anticoagulants[1] (%) | 167 (17.9) | 101 (17.9) | 66 (17.9) | 1.000 |
| Warfarin (%) | 39 ( 4.4) | 14 ( 2.7) | 25 ( 7.0) | 0.004 |
| Dabigatran (%) | 20 ( 2.3) | 11 ( 2.1) | 9 ( 2.6) | 0.764 |
| Rivaroxaban (%) | 33 ( 3.8) | 22 ( 4.1) | 11 ( 3.2) | 0.598 |
| Apixaban (%) | 82 ( 9.1) | 56 (10.3) | 26 ( 7.4) | 0.171 |
| LMWH (%) | 428 (38.8) | 332 (47.4) | 96 (23.9) | <0.001 |
| Heparin (UFH) (%) | 404 (37.1) | 197 (30.6) | 207 (46.4) | <0.001 |
| Bivalirudin (%) | 2 ( 0.2) | 1 ( 0.2) | 1 ( 0.3) | 1.000 |
| Fondaparinux (%) | 41 ( 4.8) | 37 ( 7.1) | 4 ( 1.2) | <0.001 |
| **Other** | | | | |
| ACE-I (%) | 1059 (81.0) | 561 (76.6) | 498 (86.6) | <0.001 |
| ARB (%) | 281 (33.1) | 203 (39.0) | 78 (23.7) | <0.001 |
| ACE-I/ARB (%) | 1319 (91.0) | 754 (89.1) | 565 (93.7) | 0.004 |
| Aldactone (%) | 162 (21.2) | 73 (16.9) | 89 (26.7) | 0.001 |
| Beta Blockers (%) | 1316 (89.4) | 771 (88.2) | 545 (91.1) | 0.089 |
| Digoxin (%) | 16 ( 2.4) | 9 ( 2.3) | 7 ( 2.4) | 1.000 |
| CCB (%) | 295 (34.4) | 226 (43.5) | 69 (20.4) | <0.001 |
| Amiodarone (%) | 81 (11.5) | 48 (11.9) | 33 (10.9) | 0.784 |
| Other Anti-Arrhythmic (%) | 19 ( 2.8) | 13 ( 3.3) | 6 ( 2.1) | 0.469 |
| Nitrates (%) | 166 (21.1) | 130 (27.5) | 36 (11.5) | <0.001 |
| Diuretics (%) | 348 (39.7) | 217 (41.7) | 131 (36.8) | 0.163 |
| PPI (%) | 1015 (84.2) | 608 (82.9) | 407 (86.2) | 0.148 |
| H2 Blockers (%) | 64 ( 8.9) | 35 ( 8.6) | 29 ( 9.4) | 0.808 |
| NSAIDS (%) | 12 ( 1.8) | 10 ( 2.6) | 2 ( 0.7) | 0.123 |
| Colchicine (%) | 27 ( 4.0) | 15 ( 3.9) | 12 ( 4.1) | 1.000 |
| Steroids (%) | 61 ( 8.8) | 36 ( 9.0) | 25 ( 8.4) | 0.896 |
| Hormonal replacement therapy (%) | 14 ( 2.1) | 9 ( 2.3) | 5 ( 1.7) | 0.772 |
| IV inotropic agent (%) | 38 ( 5.6) | 13 ( 3.4) | 25 ( 8.3) | 0.009 |
| Antihyperglycemic (%) | 436 (24.5) | 286 (26.8) | 150 (21.1) | 0.007 |
| Statins (%) | 1683 (99.4) | 1006 (99.1) | 677 (99.9) | 0.105 |
| Ezetimibe (%) | 75 (10.7) | 53 (13.0) | 22 ( 7.4) | 0.025 |

[1] Oral anticoagulants include warfarin, dabigatran, rivaroxaban and apixaban

## 1.12 Duration of Hospitalization

Table 1.27: Length of Stay in ICCU/Cardiology and Total Hospital Stay

|  | Total | Non ST elevation | ST elevation |
|---|---|---|---|
| n | 1778 | 1067 | 711 |
| No. of days in ICCU/Cardiology (median [IQR]) | 3.00 [2.00, 4.00] | 3.00 [2.00, 4.00] | 3.50 [3.00, 5.00] |
| Total hospital days (median [IQR]) | 4.00 [3.00, 5.00] | 4.00 [2.00, 5.00] | 4.00 [3.00, 5.00] |

## 1.13 Discharge

## 1.13.1 Medical Treatment on Discharge

Prasugrel, warfarin, ACE-I and aldactone were more often prescribed for patients with ST elevation. Clopidogrel, ticagrelor, LMWH, ARB, CCB, nitrates, diuretics, insulin and ezetimibe were prescribed more often for patients with non-ST elevation. All other recommended drugs were similarly given to both groups.

Table 1.28: Medical Treatment on Discharge among Hospital Survivors

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1726 | 1041 | 685 |  |
| **Anti-platelets** |  |  |  |  |
| Aspirin (%) | 1639 (98.3) | 981 (98.2) | 658 ( 98.4) | 0.960 |
| Clopidogrel (%) | 456 (27.6) | 364 (36.9) | 92 ( 13.8) | <0.001 |
| Prasugrel (%) | 345 (21.5) | 70 ( 7.3) | 275 ( 42.7) | <0.001 |
| Ticagrelor (%) | 779 (48.5) | 509 (52.9) | 270 ( 41.9) | <0.001 |
| P2Y12 (%) | 1580 (98.3) | 943 (97.9) | 637 ( 98.9) | 0.189 |
| **Anticoagulants** |  |  |  |  |
| Oral anticoagulants[1] (%) | 164 (17.1) | 101 (17.5) | 63 ( 16.5) | 0.749 |
| Warfarin (%) | 37 ( 4.1) | 14 ( 2.6) | 23 ( 6.2) | 0.010 |
| Dabigatran (%) | 19 ( 2.1) | 11 ( 2.0) | 8 ( 2.3) | 1.000 |
| Rivaroxaban (%) | 33 ( 3.7) | 22 ( 4.1) | 11 ( 3.1) | 0.554 |
| Apixaban (%) | 81 ( 8.7) | 56 (10.0) | 25 ( 6.8) | 0.118 |
| LMWH (%) | 60 ( 6.0) | 46 ( 7.5) | 14 ( 3.6) | 0.018 |
| **Other** |  |  |  |  |
| ACE-I (%) | 1046 (81.0) | 556 (76.5) | 490 ( 86.9) | <0.001 |
| ARB (%) | 279 (33.2) | 201 (38.9) | 78 ( 24.1) | <0.001 |
| ACE-I/ARB (%) | 1304 (91.4) | 747 (89.4) | 557 ( 94.2) | 0.002 |
| Aldactone (%) | 156 (20.6) | 70 (16.2) | 86 ( 26.5) | 0.001 |
| Beta Blockers (%) | 1303 (90.0) | 765 (88.7) | 538 ( 92.0) | 0.055 |
| Digoxin (%) | 14 ( 2.1) | 8 ( 2.0) | 6 ( 2.1) | 1.000 |
| CCB (%) | 293 (34.0) | 225 (42.5) | 68 ( 20.5) | <0.001 |
| Amiodarone (%) | 74 (10.5) | 45 (11.0) | 29 ( 9.8) | 0.699 |
| Other Anti-Arrhythmic (%) | 19 ( 2.8) | 13 ( 3.2) | 6 ( 2.1) | 0.524 |
| Nitrates (%) | 162 (20.8) | 129 (27.2) | 33 ( 10.9) | <0.001 |
| Diuretics (%) | 328 (38.1) | 208 (40.1) | 120 ( 35.1) | 0.160 |
| PPI (%) | 1001 (84.6) | 602 (83.1) | 399 ( 86.9) | 0.094 |
| H2 Blockers (%) | 53 ( 7.5) | 30 ( 7.4) | 23 ( 7.7) | 0.992 |
| NSAIDS (%) | 11 ( 1.6) | 10 ( 2.6) | 1 ( 0.4) | 0.056 |
| Colchicine (%) | 27 ( 4.0) | 15 ( 3.9) | 12 ( 4.2) | 0.979 |
| Steroids (%) | 58 ( 8.4) | 34 ( 8.5) | 24 ( 8.3) | 1.000 |
| Hormonal replacement therapy (%) | 13 ( 1.9) | 9 ( 2.3) | 4 ( 1.4) | 0.574 |
| Antihyperglycemic (%) | 432 (25.0) | 284 (27.3) | 148 ( 21.6) | 0.009 |
| Statins (%) | 1655 (99.6) | 993 (99.4) | 662 (100.0) | 0.114 |
| Ezetimibe (%) | 74 (10.4) | 53 (12.6) | 21 ( 7.2) | 0.028 |

[1] Oral anticoagulants include warfarin, dabigatran, rivaroxaban and apixaban

## 1.13.2 Discharged to

Table 1.28a: Discharged to

|  | Total | Non ST elevation | ST elevation |
| --- | --- | --- | --- |
| n | 1726 | 1041 | 685 |
| **Discharged to** | | | |
| Cardiothoracic surgery | 72 ( 4.2) | 53 ( 5.1) | 19 ( 2.8) |
| Home | 1401 (81.2) | 844 (81.1) | 557 (81.3) |
| Internal medicine | 196 (11.4) | 105 (10.1) | 91 (13.3) |
| Nursing home | 6 ( 0.3) | 4 ( 0.4) | 2 ( 0.3) |
| Other hospital | 30 ( 1.7) | 23 ( 2.2) | 7 ( 1.0) |
| Other ward | 21 ( 1.2) | 12 ( 1.2) | 9 ( 1.3) |

## 1.14 Re-Hospitalization within 30 Days of Admission

Re-hospitalization rates for patients with and without ST elevation were similar. Differences in reasons for re-hospitalization were not statistically significant.

Table 1.29: Re-Hospitalization within 30 Days of Admission

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| **All patients[1]** | | | | |
| n | 1726 | 1041 | 685 | |
| Re-hospitalization[2] (%) | 229 (16.4) | 134 (16.0) | 95 (16.9) | 0.723 |
| **Re-hospitalized patients only[2]** | | | | |
| n | 265 | 158 | 107 | |
| Scheduled (%) | 93 (40.8) | 47 (35.3) | 46 (48.4) | 0.065 |
| Cardiac (%) | 135 (60.0) | 72 (54.5) | 63 (67.7) | 0.064 |
| * Cardiac scheduled[3] (%) | 76 (56.3) | 35 (48.6) | 41 (65.1) | 0.080 |

[1] Re-hospitalization among hospital survivors

[2] Patients who were re-hospitalized after more than 30 days of admission were excluded from re-hospitalized within 30 days of admission

[3] Percentages are calculated out of cardiac rehospitalizations

## 1.15 Mortality and Major Adverse Cardiac Event (MACE)

### 1.15.1 Rates of Mortality and MACE by ECG on Admission

Unadjusted rates of in-hospital mortality, 7-days mortality and MACE (Major Adverse Cardiac Events), which included recurrent MI or UAP, recurrent ischemia, stent thrombosis, ischemic stroke, urgent revascularization (follow-up) or death occurring within 30 days from hospitalization were not significantly different in patients with and without ST elevation. However, 30-day mortality was significantly higher for patients with ST elevation compared to those with non-ST elevation.

Table 1.30: Unadjusted Rates of 7-Day, 30-Day mortality, 30-Day MACE[1]

|  | Total | Non ST elevation | ST elevation | p-value |
|---|---|---|---|---|
| n | 1778 | 1067 | 711 |  |
| In-hospital mortality (%) | 52 (2.9) | 26 (2.4) | 26 (3.7) | 0.176 |
| 7-day mortality (%) | 46 (2.7) | 22 (2.2) | 24 (3.5) | 0.136 |
| 30-day mortality (%) | 73 (4.3) | 33 (3.3) | 40 (5.8) | 0.017 |
| MACE[1] (%) | 143 (8.4) | 77 (7.7) | 66 (9.6) | 0.189 |

[1] Definition of MACE includes: recurrent MI, recurrent ischemia, stent thrombosis, ischemic stroke, urgent revascularization (follow-up), UAP or death occurring within 30 days from hospitalization



Figure 1.22: Unadjusted Rates of In−Hospital, 7−Day & 30−Day Mortality and 30−Day MACE
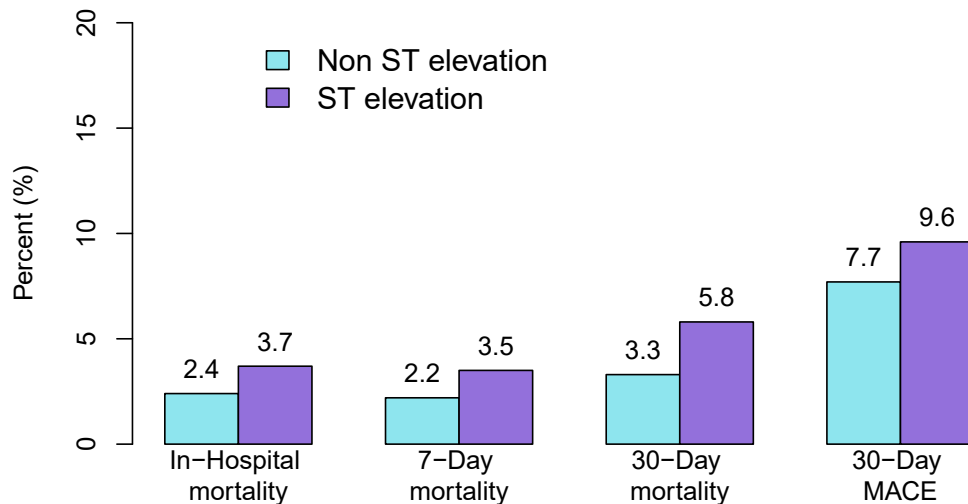
After adjustment for age and other risk factors, in-hospital, 7-day, 30-day mortality and 30-day MACE rates were significantly higher for patients with ST elevation compared to those with non-ST elevation.

Table 1.31: Mortality Rates by ECG on Admission Adjusted for Age and Other Risk Factors

| | OR (STEMI vs. NSTEMI) with 95% CI | |
| --- | --- | --- |
| | Age adjusted | Risk factors adjusted[1] |
| In-Hospital | 1.63 (0.93,2.87) | 1.97 (1,3.92) |
| 7-Days | 1.72 (0.95,3.15) | 2.17 (1.08,4.47) |
| 30-Days | 2.03 (1.26,3.3) | 2.46 (1.37,4.48) |
| MACE[2] | 1.38 (0.97,1.96) | 1.65 (1.08,2.53) |

[1] Adjusted for age, gender, past ACS, diabetes, hypertension, killip class $\geq$ 2, any angiography

[2] Definition includes: recurrent MI, recurrent ischemia, stent thrombosis, ischemic stroke, urgent revascularization (follow-up) or death occurring within 30 days from hospitalization

### 1.15.2 Rates of Mortality and MACE by Gender

Table 1.32: Unadjusted Rates of In-Hospital Mortality, 7-Day Mortality, 30-Day Mortality and 30-Day MACE, by Gender

|  | Total | Women | Men | p-value |
|---|---|---|---|---|
| n | 1778 | 351 | 1427 |  |
| In-hospital mortality (%) | 52 (2.9) | 16 ( 4.6) | 36 (2.5) | 0.064 |
| 7-day mortality (%) | 46 (2.7) | 17 ( 5.1) | 29 (2.1) | 0.005 |
| 30-day mortality (%) | 73 (4.3) | 25 ( 7.6) | 48 (3.5) | 0.002 |
| MACE[1] (%) | 143 (8.4) | 43 (13.1) | 100 (7.3) | 0.001 |

[1] Definition includes: recurrent MI, recurrent ischemia, stent thrombosis, ischemic stroke, urgent revascularization (follow-up), UAP or death occurring within 30 days from hospitalization

Table 1.33: Odds Ratios for Mortality and MACE by Gender Adjusted for Age and Other Risk Factors

|  | OR (Women vs. Men) with 95% CI | |
|---|---|---|
|  | Age Adjusted | Risk factors Adjusted[1] |
| In-Hospital mortality | 1.36 (0.7,2.51) | 1.16 (0.55,2.34) |
| 7-Days mortality | 1.92 (0.99,3.61) | 1.74 (0.83,3.54) |
| 30-Days mortality | 1.64 (0.96,2.73) | 1.4 (0.75,2.53) |
| MACE[2] | 1.54 (1.03,2.27) | 1.72 (1.08,2.69) |

[1] Adjusted for age, past ACS, diabetes, hypertension, killip class $\geq$ 2, any angiography

[2] Definition includes: recurrent MI, recurrent ischemia, stent thrombosis, ischemic stroke, urgent revascularization (follow-up), UAP or death occurring within 30 days from hospitalization.

# Chapter 2: Temporal Trends 2008-2018

**Temporal Trends in Characteristics, Management, and Outcome of Patients with ACS in Cardiology: 2008-2018**

## 2.1 Patients' Characteristics

Table 2.1: Patients' Characteristics

|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 |  |
| Gender (Male) (%) | 1387 (79.4) | 1378 (77.5) | 1453 (77.1) | 1414 (79.0) | 1427 (80.3) | 0.302 |
| Age (%) |  |  |  |  |  | 0.4 |
| ≤ 50 | 297 (17.0) | 272 (15.3) | 297 (15.8) | 246 (13.7) | 260 (14.6) |  |
| 50-75 | 1111 (63.6) | 1158 (65.1) | 1195 (63.4) | 1162 (64.9) | 1158 (65.2) |  |
| > 75 | 338 (19.4) | 349 (19.6) | 393 (20.8) | 382 (21.3) | 357 (20.1) |  |
| Age (mean (sd)) | 63.26 (13.18) | 63.64 (12.67) | 63.97 (12.91) | 64.67 (12.82) | 64.28 (12.69) | 0.001 |

## 2.2 Cardiovascular History and Risk Factors

Table 2.2: Cardiovascular History and Risk Factors

|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 |  |
| **CV history** |  |  |  |  |  |  |
| MI (%) | 30.9 | 32.0 | 30.4 | 37.2 | 38.8 | <0.001 |
| AP (%) | 39.0 | 34.4 | 28.9 | 28.1 | 25.7 | <0.001 |
| Prior PCI (%) | 34.0 | 33.8 | 34.2 | 33.4 | 35.2 | 0.58 |
| CABG (%) | 9.8 | 10.0 | 9.1 | 8.8 | 9.1 | 0.264 |
| CHF (%) | 8.4 | 8.5 | 7.9 | 6.7 | 10.4 | 0.288 |
| Stroke/TIA (%) | 6.9 | 8.2 | 8.4 | 8.2 | 9.2 | 0.022 |
| Chronic renal failure (%) | 12.4 | 12.0 | 12.6 | 11.4 | 11.4 | 0.294 |
| PVD (%) | 8.2 | 8.2 | 7.1 | 6.0 | 7.8 | 0.15 |
| **Risk factors** |  |  |  |  |  |  |
| Hypertension (%) | 59.2 | 66.0 | 66.1 | 64.7 | 67.3 | <0.001 |
| Diabetes (%) | 37.1 | 38.0 | 39.1 | 41.5 | 41.8 | <0.001 |
| Dyslipidemia (%) | 74.5 | 75.3 | 75.9 | 72.7 | 71.0 | 0.003 |
| Current smoker (%) | 38.9 | 38.4 | 39.3 | 38.5 | 43.0 | 0.025 |
| Past smoker (%) | 20.9 | 24.7 | 20.6 | 21.1 | 18.7 | 0.008 |
| Family Hx of CAD (%) | 27.0 | 31.2 | 28.8 | 33.4 | 34.0 | <0.001 |

## 2.3 Admission Information

### 2.3.1 Initial Ward of Hospitalization

Table 2.3: Initial Ward of Hospitalization

|  | 2008 | 2010 | 2013 | 2016 | 2018 |
|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 |
| Ward (%) |  |  |  |  |  |
|    Cardiology/ICCU | 89.2 | 89.0 | 84.8 | 86.8 | 86.4 |
|    Internal Medicine | 10.2 | 9.4 | 13.5 | 12.3 | 12.4 |
|    Other | 0.6 | 1.5 | 1.8 | 0.9 | 1.1 |

p for trend 0.005

### 2.3.2 ECG on Admission

Table 2.4: ECG on Admission

|  | 2008 | 2010 | 2013 | 2016 | 2018 |
|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 |
| ST elevation | 43.6 | 43.6 | 39.7 | 39.8 | 40.0 |
| Non ST elevation | 56.4 | 56.4 | 60.3 | 60.2 | 60.0 |

p for trend 0.003

### 2.3.3 Killip Class on Admission

Table 2.5: Killip Class on Admission

|  | 2008 | 2010 | 2013 | 2016 | 2018 |
|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 |
| Killip class (%) |  |  |  |  |  |
|    1 | 87.6 | 87.2 | 87.6 | 90.5 | 87.4 |
|    2 | 7.5 | 6.7 | 7.1 | 5.6 | 6.8 |
|    3 | 3.9 | 4.3 | 3.3 | 2.5 | 3.7 |
|    4 | 1.0 | 1.8 | 1.9 | 1.4 | 2.1 |

p for trend 0.443

## 2.4 Primary Reperfusion Therapy in Patients with ST Elevation

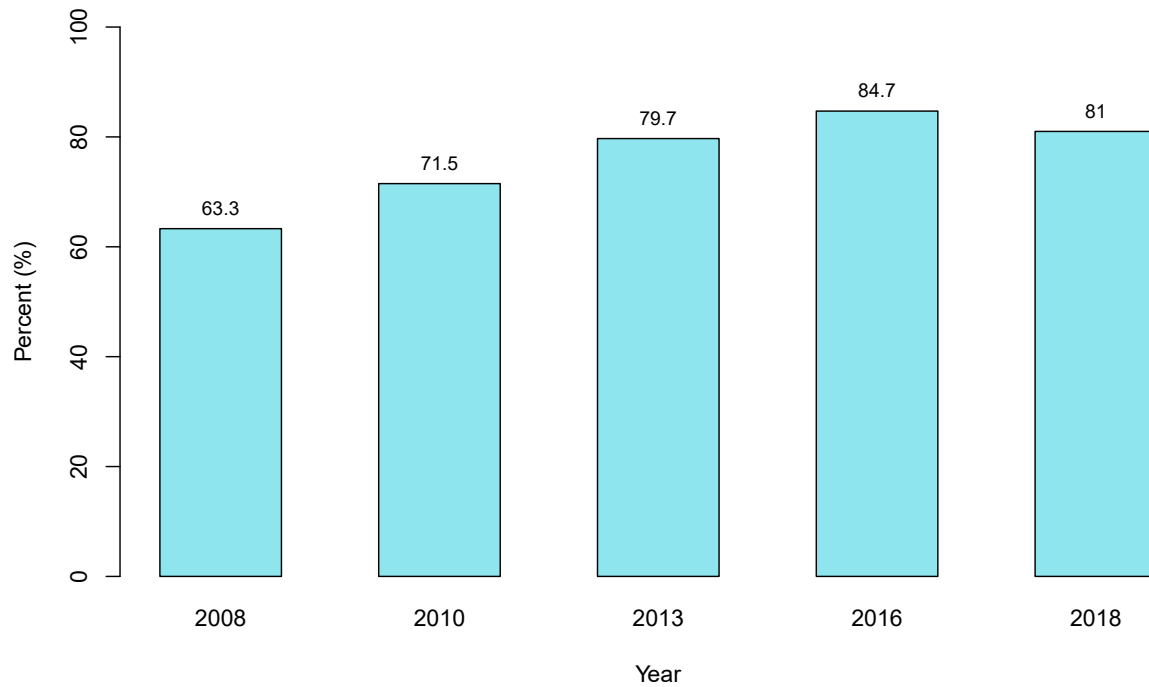Figure 2.1: Primary Reperfusion among Patients with ST Elevation



Figure 2.2: Type or Primary Reperfusion among Patients with ST Elevation
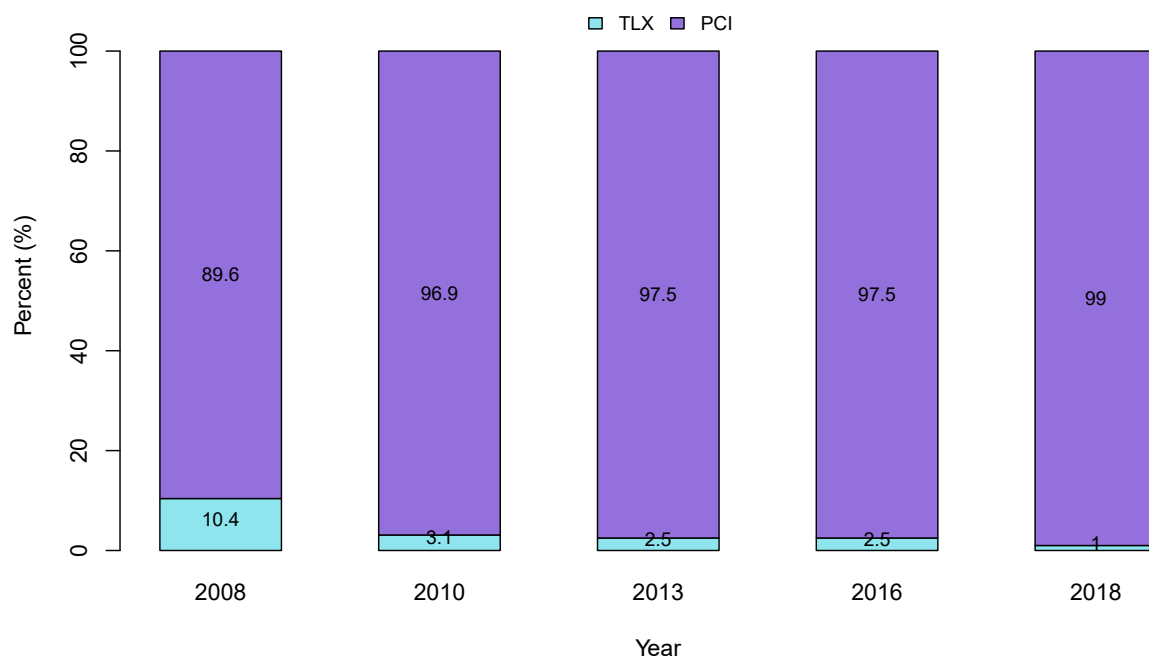
### 2.4.1 Primary PCI/Angiography

Table 2.5.1: Vascular access during Primary Reperfusion

|                 | 2008      | 2010        | 2013        | 2016        | 2018        |
|-----------------|-----------|-------------|-------------|-------------|-------------|
| n               | 482       | 555         | 596         | 603         | 576         |
| Vascular access |           |             |             |             |             |
|   Femoral | 0 (NaN) | 374 (72.3) | 225 (39.5) | 126 (21.6) | 114 (20.3) |
|   Radial  | 0 (NaN) | 143 (27.7) | 345 (60.5) | 449 (76.9) | 438 (78.1) |
|   Both    | 0 (NaN) | 0 ( 0.0)   | 0 ( 0.0)   | 9 ( 1.5)   | 9 ( 1.6)   |

### 2.4.2 Coronary angiography (*excluding primary PCI*)

Table 2.5.2: Vascular access during coronary angiography

|                       | 2008        | 2010        | 2013        | 2016        | 2018        |
|-----------------------|-------------|-------------|-------------|-------------|-------------|
| n                     | 1746        | 1779        | 1885        | 1791        | 1778        |
| Coronary angiography  | 1094 (63.2) | 1094 (62.1) | 1129 (60.9) | 1127 (64.1) | 1167 (65.7) |
|   Vascular access |         |             |             |             |             |
|     Femoral | 0 (NaN) | 0 (NaN) | 0 (NaN) | 187 (16.7) | 99 (11.9) |
|     Radial  | 0 (NaN) | 0 (NaN) | 0 (NaN) | 917 (81.7) | 710 (85.0) |
|     Both    | 0 (NaN) | 0 (NaN) | 0 (NaN) | 19 ( 1.7)  | 26 ( 3.1)  |

## 2.5 Time Intervals

Table 2.6: Time Intervals in reperfused patients (minutes)

| | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 482 | 555 | 596 | 603 | 576 | |
| Symptom onset to ER arrival (median [IQR]) | 114.00 [70.00, 210.00] | 115.00 [70.00, 211.50] | 129.50 [74.00, 250.25] | 116.00 [70.00, 194.00] | 120.00 [71.50, 211.75] | 0.352 |
| ER arrival to primary PCI (door to balloon) (median [IQR]) | 67.00 [39.00, 108.00] | 65.00 [38.00, 110.00] | 67.00 [35.00, 105.00] | 50.00 [26.00, 85.00] | 49.00 [27.00, 82.00] | <0.001 |
| ER arrival to TLx (median [IQR]) | 35.00 [21.00, 50.00] | 50.00 [32.00, 68.50] | 31.50 [20.00, 50.50] | 34.50 [27.25, 66.00] | 27.00 [23.25, 33.00] | 0.772 |
| Onset to balloon (median [IQR]) | 194.50 [127.50, 310.00] | 195.00 [131.00, 330.00] | 200.00 [137.50, 350.00] | 169.00 [120.00, 284.25] | 180.00 [120.00, 286.25] | 0.035 |
| Door to balloon ≤ 90 min. (%) | 272 (67.3) | 334 (66.7) | 352 (69.7) | 413 (77.9) | 374 (80.4) | <0.001 |

Table 2.7: Time Intervals (minutes) in reperfused patient, by gender

|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| n | 401 | 455 | 499 | 493 | 482 | |
| Symptom onset to ER arrival (median [IQR]) | 111.00 [69.50, 205.50] | 110.00 [67.00, 210.00] | 126.00 [71.00, 240.00] | 110.00 [65.25, 191.00] | 119.00 [70.00, 211.00] | 0.551 |
| ER arrival to primary PCI (door to balloon) (median [IQR]) | 65.50 [38.25, 102.50] | 64.00 [36.25, 103.00] | 67.00 [37.00, 105.25] | 50.00 [25.00, 85.00] | 48.00 [26.00, 79.00] | <0.001 |
| ER arrival to TLx (median [IQR]) | 37.00 [20.75, 50.50] | 55.00 [40.00, 72.00] | 30.00 [20.00, 46.00] | 34.50 [27.25, 66.00] | 27.00 [23.25, 33.00] | 0.792 |
| Onset to balloon (median [IQR]) | 182.50 [125.75, 300.00] | 188.00 [125.00, 324.50] | 195.00 [132.75, 345.00] | 165.00 [116.00, 270.00] | 175.50 [115.25, 278.75] | 0.032 |
| **Women** | | | | | | |
| n | 81 | 100 | 97 | 110 | 94 | |
| Symptom onset to ER arrival (median [IQR]) | 121.00 [75.00, 265.00] | 130.00 [86.50, 233.50] | 147.00 [85.00, 330.00] | 124.00 [93.25, 227.75] | 125.00 [79.00, 241.00] | 0.354 |
| ER arrival to primary PCI (door to balloon) (median [IQR]) | 72.00 [40.25, 130.00] | 78.00 [40.00, 132.00] | 63.00 [33.00, 103.00] | 58.50 [30.00, 94.00] | 59.00 [29.00, 104.50] | 0.096 |
| ER arrival to TLx (median [IQR]) | 30.00 [25.00, 41.00] | 23.00 [19.00, 27.00] | 70.00 [70.00, 70.00] | NA [NA, NA] | NA [NA, NA] | 0.392 |
| Onset to balloon (median [IQR]) | 210.00 [133.75, 385.00] | 249.50 [155.00, 356.75] | 212.00 [150.00, 397.00] | 188.00 [144.00, 385.00] | 195.50 [151.75, 300.00] | 0.674 |

## 2.6 Procedures during Hospitalization in CCU

Table 2.8 Procedures during Hospitalization in CCU

| | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 | |
| Coronary Angiography (%) | 87.3 | 89.7 | 88.9 | 93.3 | 93.1 | <0.001 |
| Any PCI [1] (%) | 78.5 | 79.5 | 77.9 | 77.2 | 68.3 | <0.001 |
| Stent (%) | 90.9 | 90.8 | 91.9 | 94.0 | 95.2 | <0.001 |
| CABG (%) | 3.9 | 1.7 | 4.7 | 3.5 | 3.5 | 0.474 |
| IABP (%) | 4.8 | 4.6 | 2.3 | 2.2 | 2.0 | <0.001 |
| Echocardiography (%) | 86.5 | 85.9 | 85.2 | 85.7 | 91.2 | <0.001 |

[1] Percent of all patients undergoing angiography



Figure 2.3: Trends In−Hospital Procedures
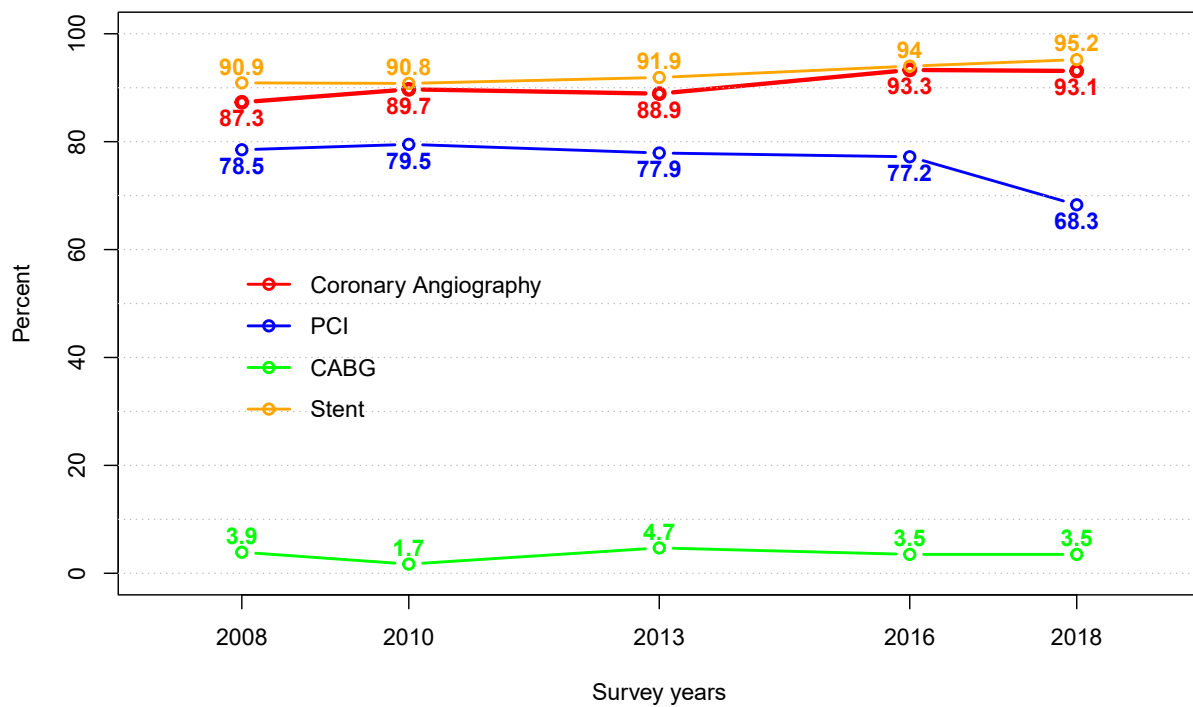
## 2.7 In-Hospital Complications

Table 2.9: In-Hospital Complications

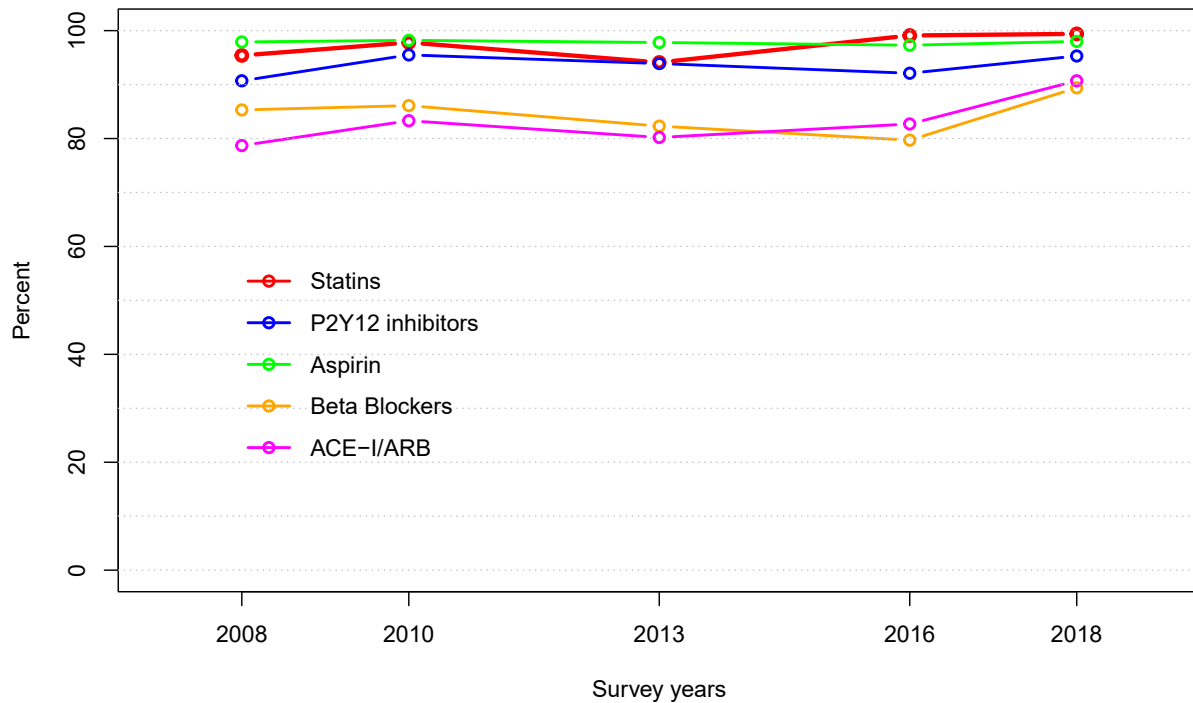|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 | |
| Re-MI (%) | 1.5 | 1.1 | 1.0 | 0.5 | 0.6 | 0.001 |
| Post MI angina/Re-ischemia (%) | 3.6 | 2.0 | 2.0 | 1.3 | 1.2 | <0.001 |
| Sub-Acute Stent Thrombosis (%) | 1.3 | 0.6 | 0.8 | 0.7 | 0.3 | 0.003 |
| Mild-moderate CHF (Killip 2) (%) | 7.5 | 7.8 | 6.1 | 5.9 | 7.4 | 0.244 |
| Pulmonary edema (Killip 3) (%) | 6.6 | 4.9 | 4.4 | 3.1 | 3.3 | <0.001 |
| Cardiogenic shock (Killip 4) (%) | 2.7 | 3.1 | 3.3 | 2.0 | 3.1 | 0.691 |
| Free wall rupture (%) | 0.6 | 0.1 | 0.1 | 0.2 | 0.1 | 0.005 |
| Tamponade (%) | 0.5 | 0.3 | 0.0 | 0.2 | 0.2 | 0.024 |
| Moderate-severe MR (%) | 1.6 | 1.7 | 2.1 | 1.1 | 0.8 | 0.021 |
| Sustained VT (%) | 1.0 | 1.3 | 1.3 | 1.1 | 1.1 | 0.949 |
| High degree AVB (2-3) (%) | 2.2 | 2.1 | 1.5 | 1.4 | 1.5 | 0.021 |
| Primary VF (%) | 1.2 | 1.9 | 1.2 | 1.3 | 1.3 | 0.604 |
| Secondary VF (%) | 1.3 | 0.6 | 0.5 | 0.6 | 0.5 | 0.006 |
| Asystole (%) | 2.1 | 1.9 | 1.9 | 1.3 | 2.0 | 0.523 |
| TIA (%) | 0.2 | 0.1 | 0.2 | 0.1 | 0.3 | 0.369 |
| Stroke (%) | 0.6 | 0.5 | 0.6 | 0.5 | 0.5 | 0.506 |
| Acute renal injury (%) | 4.4 | 6.1 | 4.6 | 5.1 | 4.9 | 0.975 |
| Bleeding (%) | 1.5 | 2.4 | 0.9 | 1.8 | 2.8 | 0.07 |

## 2.8 In-Hospital Treatment

Table 2.10: In-Hospital Treatment

|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 | |
| Aspirin (%) | 97.9 | 98.2 | 97.8 | 97.3 | 98.0 | 0.519 |
| Heparin (%) | 36.8 | 43.2 | 53.3 | 44.7 | 37.1 | 0.042 |
| LMWH (%) | 50.0 | 45.9 | 41.9 | 33.5 | 38.8 | <0.001 |
| P2Y12 inhibitors (%) | 90.7 | 95.5 | 93.9 | 92.1 | 95.3 | 0.002 |
| Clopidogrel (%) | 90.7 | 94.9 | 45.4 | 31.6 | 27.9 | <0.001 |
| Prasugrel (%) | 0.0 | 0.3 | 30.1 | 25.6 | 20.5 | <0.001 |
| Ticagrelor (%) | 0.0 | 0.3 | 18.4 | 35.0 | 46.9 | <0.001 |
| IIb/IIIa antagonists (%) | 31.2 | 24.6 | 13.6 | 9.1 | 5.3 | <0.001 |
| Beta Blockers (%) | 85.3 | 86.1 | 82.3 | 79.7 | 89.4 | 0.996 |
| ACE-I/ARB (%) | 78.7 | 83.3 | 80.2 | 82.7 | 90.7 | <0.001 |
| Statins (%) | 95.4 | 97.8 | 94.1 | 99.1 | 99.4 | <0.001 |
| LLDs (%) | 94.7 | 97.1 | 93.1 | 100.0 | 94.8 | 0.065 |
| Digoxin (%) | 2.2 | 1.4 | 1.1 | 1.3 | 1.6 | 0.085 |
| Diuretic (%) | 29.1 | 27.9 | 24.8 | 22.6 | 32.5 | 0.201 |
| Nitrates (%) | 27.6 | 23.7 | 16.6 | 13.9 | 17.6 | <0.001 |

Figure 2.4: Trends in Hospital Treatment

## 2.9 Medical Treatment on Discharge

Table 2.11: Medical Treatment on Discharge among Hospital Survivors

|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 1702 | 1741 | 1848 | 1761 | 1726 |  |
| Aspirin (%) | 96.2 | 96.9 | 95.8 | 95.7 | 98.3 | 0.051 |
| Beta Blockers (%) | 82.0 | 82.2 | 78.7 | 82.7 | 88.8 | <0.001 |
| P2Y12 inhibitors (%) | 79.7 | 86.5 | 85.6 | 88.0 | 95.5 | <0.001 |
| Clopidogrel (%) | 79.7 | 85.9 | 42.5 | 31.9 | 27.6 | <0.001 |
| Prasugrel (%) | 0.0 | 0.3 | 27.7 | 24.9 | 20.8 | <0.001 |
| Ticagrelor (%) | 0.0 | 0.3 | 15.4 | 31.2 | 47.1 | <0.001 |
| ACE-I/ARB (%) | 75.4 | 80.6 | 77.1 | 81.5 | 91.4 | <0.001 |
| Statins (%) | 92.6 | 96.2 | 93.6 | 97.9 | 99.6 | <0.001 |
| LLDs (%) | 93.7 | 96.4 | 93.8 | 100.0 | 99.1 | <0.001 |
| Digoxin (%) | 1.5 | 1.0 | 0.9 | 1.3 | 1.3 | 0.814 |
| Diuretic (%) | 24.0 | 22.8 | 19.7 | 22.4 | 33.6 | 0.002 |
| Nitrates (%) | 8.6 | 6.7 | 7.6 | 5.4 | 12.6 | 0.334 |

Figure 2.5: Medical Treatment in Discharge among Hospital Survivors
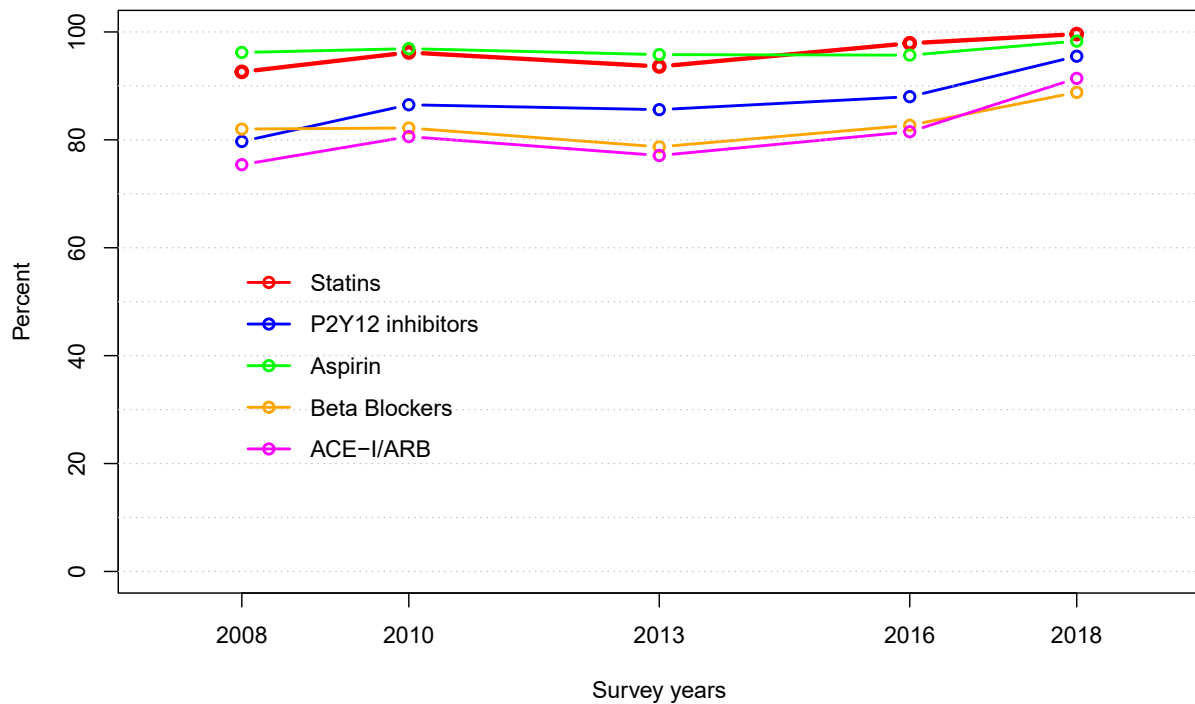
## 2.10 Short and long Term Outcomes

Table 2.12: Rates of Mortality and MACE[1]

|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| n | 1746 | 1779 | 1885 | 1791 | 1778 | |
| **Mortality** | | | | | | |
| In-hospital | 2.5 | 2.1 | 2.0 | 1.7 | 2.9 | 0.749 |
| 7-day | 2.6 | 2.2 | 1.8 | 1.6 | 2.7 | 0.678 |
| 30-day | 4.4 | 4.2 | 3.7 | 3.0 | 4.3 | 0.349 |
| 1 year | 8.1 | 8.1 | 8.3 | 7.8 | 8.9 | 0.624 |
| **MACE**[1] | | | | | | |
| 30-day MACE | 12.5 | 10.3 | 10.4 | 8.9 | 8.4 | <0.001 |

[1] 30 day MACE: Death/UAP/MI-isch/CVA/St.thromb/Follow-up urg. revasc



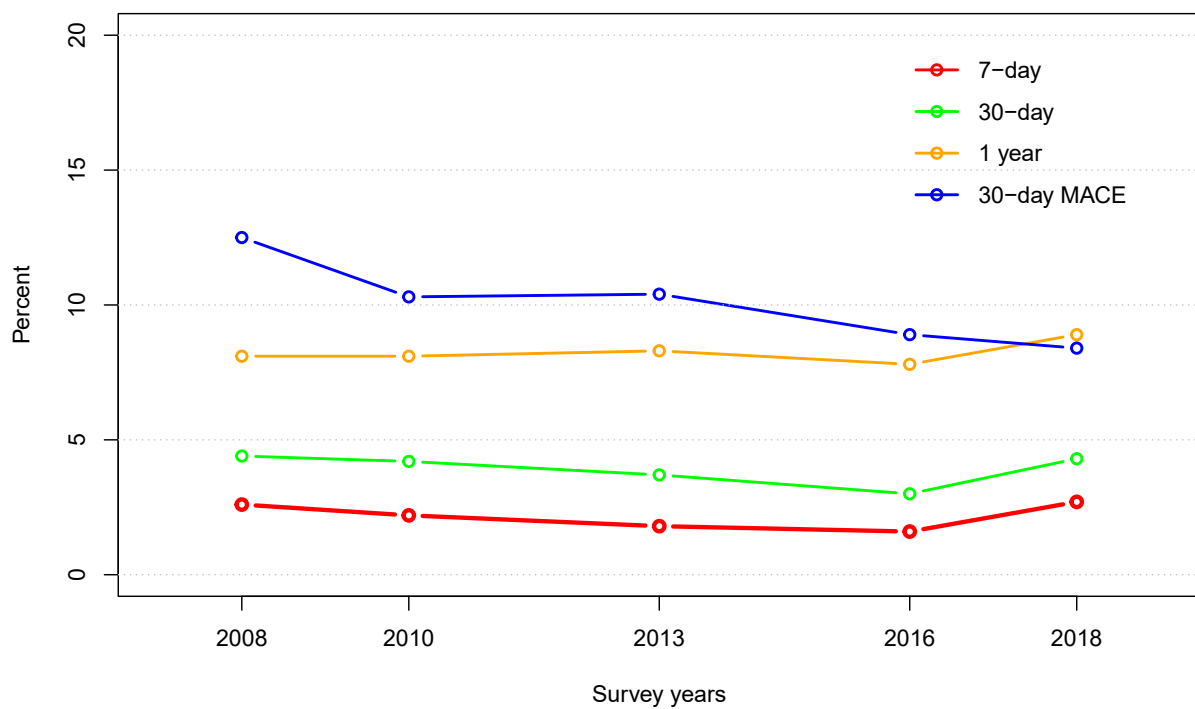Figure 2.6: Rates of Mortality and 30−day MACE

Table 2.13: Rates of Mortality and MACE[1] by Gender

| | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| n | 1387 | 1378 | 1453 | 1414 | 1427 | |
| **Mortality** | | | | | | |
| In-hospital | 1.9 | 2.0 | 1.5 | 1.3 | 2.5 | 0.622 |
| 7-day | 2.1 | 1.9 | 1.3 | 1.2 | 2.1 | 0.54 |
| 30-day | 3.5 | 3.6 | 2.7 | 2.2 | 3.5 | 0.347 |
| 1 year | 7.4 | 6.9 | 6.9 | 6.8 | 7.2 | 0.783 |
| **MACE[1]** | | | | | | |
| 30-day | 10.7 | 9.2 | 9.3 | 7.9 | 7.3 | 0.001 |
| | | | | | | |
| **Women** | | | | | | |
| n | 359 | 401 | 432 | 377 | 351 | |
| **Mortality** | | | | | | |
| In-hospital | 5.0 | 2.5 | 3.5 | 3.2 | 4.6 | 0.963 |
| 7-day | 4.5 | 3.2 | 3.3 | 2.9 | 5.1 | 0.817 |
| 30-day | 7.8 | 6.2 | 7.0 | 6.1 | 7.6 | 0.885 |
| 1 year | 10.9 | 12.3 | 12.9 | 11.6 | 15.8 | 0.144 |
| **MACE[1]** | | | | | | |
| 30-day | 19.5 | 14.2 | 14.1 | 12.7 | 13.1 | 0.016 |

[1] 30 day MACE: Death/UAP/MI-isch/CVA/St.thromb/Follow-up urg. revasc



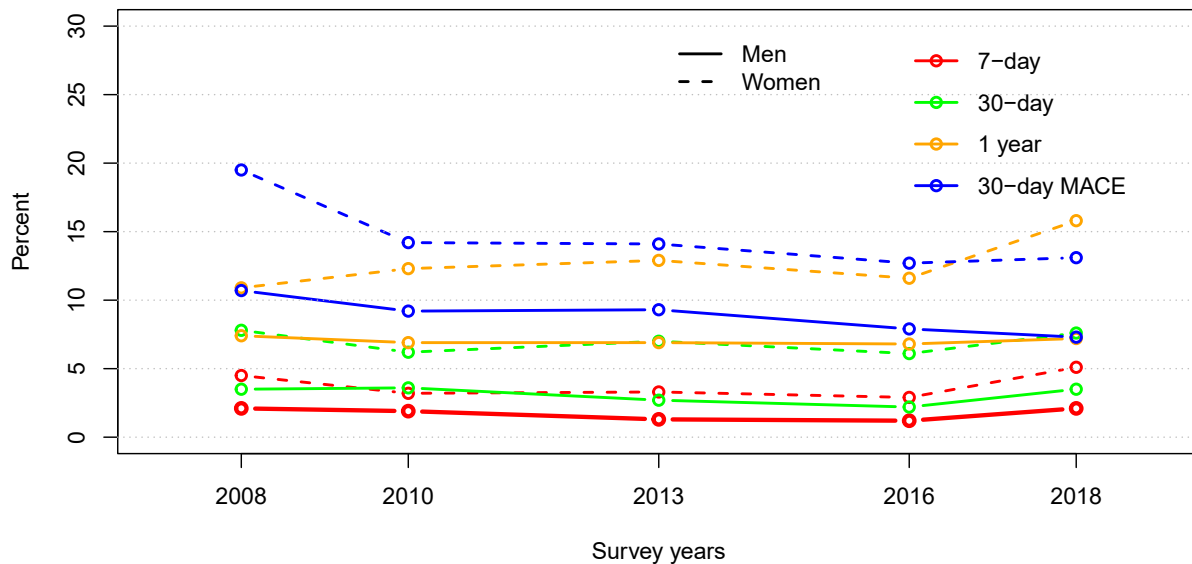Figure 2.7: Rates of Mortality and 30−day MACE by gender

Table 2.14: Rates of Mortality and MACE[1] by ECG on Admission

|  | 2008 | 2010 | 2013 | 2016 | 2018 | p for trend |
|---|---|---|---|---|---|---|
| **ST elevation** |  |  |  |  |  |  |
| n | 761 | 776 | 748 | 712 | 711 |  |
| **Mortality** |  |  |  |  |  |  |
| In-hospital | 3.7 | 2.7 | 2.9 | 3.1 | 3.7 | 0.881 |
| 7-day | 4.1 | 2.7 | 3.1 | 3.3 | 3.5 | 0.724 |
| 30-day | 6.0 | 4.8 | 4.6 | 5.1 | 5.8 | 0.98 |
| 1 year | 8.1 | 8.3 | 8.8 | 8.0 | 10.4 | 0.247 |
| **MACE[1]** |  |  |  |  |  |  |
| 30-day | 13.7 | 10.4 | 11.2 | 10.5 | 9.6 | 0.029 |
|  |  |  |  |  |  |  |
| **Non ST elevation** |  |  |  |  |  |  |
| n | 985 | 1003 | 1137 | 1079 | 1067 |  |
| **Mortality** |  |  |  |  |  |  |
| In-hospital | 1.6 | 1.7 | 1.3 | 0.7 | 2.4 | 0.562 |
| 7-day | 1.4 | 1.8 | 0.9 | 0.5 | 2.2 | 0.93 |
| 30-day | 3.2 | 3.8 | 3.1 | 1.7 | 3.3 | 0.25 |
| 1 year | 8.1 | 7.9 | 8.0 | 7.6 | 7.9 | 0.747 |
| **MACE[1]** |  |  |  |  |  |  |
| 30-day | 11.7 | 10.3 | 9.9 | 7.8 | 7.7 | <0.001 |

[1] 30 day MACE: Death/UAP/MI-isch/CVA/St.thromb/Follow-up urg. revasc



Figure 2.8: Rates of Mortality and 30−day MACE
by ECG on Admission