

**Long-term  $\beta$ -Blocker Therapy and Clinical Outcomes  
After Acute Myocardial Infarction in Patients Without  
Heart Failure: nationwide cohort study**

**Supplemental Table 1. List of medication**

| <b>Name</b>                                    | <b>ATC code</b> |
|--|-----------------|
| <b><math>\beta</math>-blocker</b>              | C07AA05         |
|  | C07AA15         |
|  | C07AB02         |
|  | C07AB03         |
|  | C07AB04         |
|  | C07AB05         |
|  | C07AB06         |
|  | C07AB07         |
|  | C07AB08         |
|  | C07AB09         |
|  | C07AB11         |
|  | C07AB12         |
|  | C07AG           |
|  | C07AG01         |
|  | C07AG02         |
|  | C07BB02         |
|  | C07BB07         |
|  | C07CB03         |
|  | C07FB02         |
| <b>Angiotensin-converting enzyme inhibitor</b> | C09AA           |
|  | C09AA01         |
|  | C09AA02         |
|  | C09AA03         |
|  | C09AA04         |
|  | C09AA05         |
|  | C09AA06         |
|  | C09AA07         |
|  | C09AA08         |
|  | C09AA09         |
|  | C09AA12         |
|  | C09AA13         |
|  | C09AA14         |
|  | C09AA15         |
|  | C09AA16         |
|  | C09BA01         |
|  | C09BA02         |

**Angiotensin receptor blocker**

C09BA03  
C09BA04  
C09BA05  
C09BB05

C09CA01  
C09CA02  
C09CA03  
C09CA04  
C09CA06  
C09CA07  
C09CA08  
C09CA10  
C09DA  
C09DA01  
C09DA02  
C09DA03  
C09DA04  
C09DA06  
C09DA07  
C09DA08  
C09DB01  
C09DB02  
C09DB04  
C09DB06  
C09DB08  
C09DX03  
C09DX04  
C10BX  
C10BX10

**Calcium channel blocker**

C07FB02  
C08CA  
C08CA01  
C08CA02  
C08CA03  
C08CA04  
C08CA05  
C08CA06

C08CA07  
C08CA08  
C08CA09  
C08CA10  
C08CA11  
C08CA12  
C08CA13  
C08CA14  
C08CA15  
C08DA01  
C08DB01  
C09BB05  
C09DB01  
C09DB02  
C09DB04  
C09DB06  
C09DB08  
C09DX03  
C10BX03

**Statin**

A10BH  
C09DX  
C10AA01  
C10AA02  
C10AA03  
C10AA04  
C10AA05  
C10AA07  
C10AA08  
C10BA02  
C10BA03  
C10BA04  
C10BA05  
C10BA06  
C10BX  
C10BX03  
C10BX10

**Ticagrelor or prasugrel**

B01AC22

**Aspirin**

B01AC24  
C08CA01

**Clopidogrel**

B01AC06  
B01AC30  
C08CA01  
M03BA53  
N02BA01  
N02BA51  
N02BE51  
R05X  
R06AA57

**Anticoagulant**

B01AC04  
B01AC30  
C08CA01

B01AA03  
B01AE07  
B01AF01  
B01AF02  
B01AF03

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**Supplemental Table 2. Type of  $\beta$ -blocker prescribed**

|             | At index MI                                 |   | At 1 year after index MI                    |
|-------------|---|---|---|
|             | $\beta$ -blocker $\geq 1$ year<br>(N=22707) | $\beta$ -blocker $< 1$ year<br>(N=6263) | $\beta$ -blocker $\geq 1$ year<br>(N=22707) |
| Carvedilol  | 12138 (53.5)                                | 3175 (50.7)                             | 10699 (47.1)                                |
| Bisoprolol  | 7493 (33.0)                                 | 2072 (33.1)                             | 8939 (39.4)                                 |
| Nebivolol   | 1283 (5.7)                                  | 401 (6.4)                               | 2296 (10.1)                                 |
| Propranolol | 723 (3.2)                                   | 272 (4.3)                               | 94 (0.4)                                    |
| Atenolol    | 429 (1.9)                                   | 127 (2.0)                               | 302 (1.3)                                   |
| Metoprolol  | 276 (1.2)                                   | 83 (1.3)                                | 98 (0.4)                                    |
| Labetalol   | 137 (0.6)                                   | 49 (0.8)                                | 3 (0.0)                                     |
| Esmolol     | 71 (0.3)                                    | 47 (0.8)                                | 3 (0.0)                                     |
| Bevantolol  | 56 (0.2)                                    | 18 (0.3)                                | 115 (0.5)                                   |
| Celiprolol  | 51 (0.2)                                    | 6 (0.1)                                 | 64 (0.3)                                    |
| Amosulalol  | 27 (0.1)                                    | 6 (0.1)                                 | 33 (0.1)                                    |
| Betaxolol   | 20 (0.1)                                    | 4 (0.1)                                 | 51 (0.2)                                    |
| Arotinolol  | 3 (0.0)                                     | 3 (0.0)                                 | 10 (0.0)                                    |

MI=myocardial infarction.

**Supplemental Table 3. Clinical outcomes since 1 year after index MI according to type of  $\beta$ -blocker**

|  |                                | Types of $\beta$ -blocker |   |   |  |
|--|--------------------------------|---------------------------|---|---|--|
|  |                                | $\beta$ -blocker <1 year  | $\beta$ -blocker $\geq$ 1 year:<br>Carvedilol | $\beta$ -blocker $\geq$ 1 year:<br>Bisoprolol | $\beta$ -blocker $\geq$ 1 year:<br>Nebivolol |
| <b>All-cause death</b>                       | <b>Incidence rate</b>          | 25.7                      | 13.9  | 11.9  | 13.3   |
|  | <b>Adjusted HR<sup>†</sup></b> | 1 (ref)                   | 0.84 (0.74–0.91)                              | 0.77 (0.67–0.88)                              | 0.85 (0.67–1.07)                             |
| <b>Recurrent MI</b>                          | <b>Incidence rate</b>          | 8.2                       | 5.0   | 5.5   | 4.5  |
|  | <b>Adjusted HR<sup>†</sup></b> | 1 (ref)                   | 0.79 (0.62–0.99)                              | 0.86 (0.67–1.11)                              | 0.72 (0.50–1.04)                             |
| <b>Hospitalisation for new heart failure</b> | <b>Incidence rate</b>          | 5.4                       | 4.3   | 3.3   | 3.9  |
|  | <b>Adjusted HR<sup>†</sup></b> | 1 (ref)                   | 1.01 (0.77–1.34)                              | 0.79 (0.60–1.03)                              | 0.97 (0.66–1.42)                             |
| <b>A composite outcome*</b>                  | <b>Incidence rate</b>          | 37.0                      | 21.8  | 19.5  | 20.7   |
|  | <b>Adjusted HR<sup>†</sup></b> | 1 (ref)                   | 0.84 (0.75–0.93)                              | 0.78 (0.69–0.87)                              | 0.83 (0.69–0.87)                             |

Landmark analyses were performed among patients who were event-free from death, recurrent MI, or heart failure for 1 year after index MI.

\* A composite of all-cause death, recurrent MI, or hospitalisation for new heart failure

<sup>†</sup>Adjusted for age, sex, hypertension, atrial fibrillation or flutter, Charlson comorbidities, hyperlipidemia, gout, depression, valve disorder and medications at 1 year after index MI.

HR=hazard ratio; MI=myocardial infarction; ref=reference.

**Supplemental Figure 1. Temporal trends of long-term  $\beta$ -blocker therapy during study period**

