SUPPLEMENTAL MATERIAL
Supplemental Methods

Measurement of renal filtration markers and their calibration

This study was conducted only for patients enrolled in a single institution, so the measurement of serum creatinine (Scr) and cystatin C (Scys) was exclusively performed in the Department of Laboratory Medicine of Seoul National University Hospital (SNUH). This laboratory has obtained accreditation from many domestic and international certification bodies such as the College of American Pathologists for quality control. However, inevitable changes occurred in the measurement of renal filtration markers, since patients were enrolled over a long time with a total enrollment period of 11 years. During the study period, we updated the automated test equipment, and following international trends, implemented standardization of the Scr measurement in the latter part of the study. Therefore, the impact of the fundamental changes in test methods should be considered.

As with most laboratories, Scr was measured with the kinetic Jaffe method, which is a colorimetric analysis using an alkaline picric reaction. Isotope dilution mass spectrometry (IDMS) traceable calibration was introduced at SNUH from April 2009 for standardized Scr measurement. Prior to that time, the crude values obtained from the Jaffe reaction were reported as they were without additional calibration. Patients enrolled before April 2009 were 217 patients, or 11.2% of all the study population, who underwent Scr measurement using the Hitachi 7600 automated analyzer (Hitachi high-technologies Co., Tokyo, Japan), Roche calibrator, and CREA reagent (Roche Diagnostics GmbH, Mannheim, Germany). The Scr value of these patients could not be directly applied to the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation, which is the eGFR formula developed based on the standardized Scr.25 As an alternative, we used a correction method that was
previously introduced in a reference study. Nephrologists of SNUH have published the results of calibrating the coefficients of the MDRD equation using IDMS calibration to specific values for Koreans.\textsuperscript{26} This study was conducted at a similar time as when we enrolled patients with non-standardized Scr values in the stent registry. They used data from 151 Korean patients collected from April 2008 to February 2009. They sent forty randomly selected frozen samples to the Cleveland Clinic Reference Laboratory, who performed IDMS calibration studies of MDRD equation, to harmonize the Scr measurements of the two institutions. The formula for correcting the Scr measurements at that time to the IDMS calibrated value was: calibrated Scr (mg/dL) = 1.0734 x measured Scr - 0.2418. The Scr measurements for the period from April 2009 to December 2010, when 512 patients (26.6\%) were enrolled, refined this correction formula a little more. According to the recommendations of the reagent manufacturer and the institution's own standards, the measured Scr values were multiplied by 1.07 and then subtracted by 0.2mg/dL to obtain the Scr values with IDMS calibration.\textsuperscript{27}

The compensated Jaffé method was applied from January 2011 to ensure accuracy comparable to that measured by the IDMS method, the gold standard of Scr measurement. Since January 2011, the systematic error of the Jaffé assay due to non-creatinine chromogens was overcome by subtracting 0.3mg/dL from the Scr values obtained using the Roche updated reagent system and TBA-200FR automated analyzer (Canon Medical Systems Corporation, Tochigi, Japan) to implement the rate-blanked compensated kinetic alkaline picrate Jaffé method.\textsuperscript{27, 28} About two-thirds (1199 patients) of the study population were enrolled after changing the automated test equipment. Based on the assumption that there are negligible systematic deviations between the Scr measurements before and after the change, we applied the Scr values from April 2009 to the CKD-EPI eGFR equation without further calibration. On the other hand, the measurements before April 2009 were corrected according to the calibration method of the reference paper,\textsuperscript{26} and the eGFR of the registered patients was calculated using
For the Scys measurement, the SNUH laboratory used nephelometry (PENIA, particle-enhanced nephelometric assay) from December 2004 to November 2011, but from then on it replaced the assay with a turbidimetric test (PETIA, particle-enhanced immunoturbidimetric assay). Both the PETIA and PENIA methods measure the Scys value using the aggregation reaction, in which cystatin C and cystatin-specific antibody react with each other to form an insoluble complex. PETIA quantifies the increase in the turbidity of the solution when cystatin C reacts with the antibody (Roche Tina-quant Generation 1 assay tested with Roche/Hitachi MODULAR P analyzer, Roche/Hitachi, Indianapolis, IN), but on the other hand, PENIA gauge the degree of light scattering as the light transmitted through the mixed solution of the insoluble cystatin C and anti-cystatin C antibody complex (N Latex assay on the Siemens BN-II analyzer, Siemens Health Care Diagnostic, Marburg, Germany). Since December 2011, patients who measured the Scys using the Roche PETIA assay were 1012, 52.5% of the study population.

Just as IDMS traceable calibration introduces standardization into Scr measurement, several attempts have been made to standardize different assays to increase the reliability of Scys measurements. In particular, since June 2010, the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) began to disseminate reference materials (ERM-DA471/IFCC) for the standardization of Scys measurement, and many manufacturers and institutions introduced standardized Scys assays into their daily practice. However, the two Scys assays that had been used in SNUH were not standardized, so it is not appropriate to apply
the test results to the CKD-EPI equation, which requires standardized Scys values. The unstandardized Scys values measured by the two assays are not interchangeable with each other. Scys values measured by the PENIA assay generally tends to be slightly lower than Scys values obtained by the PETIA method. Also, there was a so-called 'systemic drift' in PENIA test kits manufactured from 2000 to 2010, and it was reported that recently produced kits tend to measure the results slightly lower than actual values. Therefore, it is inappropriate to use the Scys values obtained by the two methods of PETIA and PENIA to calculate the eGFR on the same line without additional correction.

To solve this problem, we adopted a calibration method to standardized Scys values in a reference study that examined the revised CKD-EPI equation. In this study, data from several sources not only differed from the assay kits or automated equipment used for Scys measurement but also varied in their study period. The researchers pooled data from these studies, data of PENIA and PETIA assays were converted to standardized Scys values using different conversion formulas for each assay and specified study period. These data included studies that used the same vendor assays as those used by the SNUH laboratory. We chose two equations that were used to standardize measured Scys values at a time similar to when the SNUH laboratory performed Scys assays for the registry data. To standardize the Scys values obtained by the PENIA method, we selected the conversion equation for the ARIC (Atherosclerosis Risk in Communities Study) which collected data in 2008 using the same Siemens BN-II system as our study: IFCC Scys (mg/L) = 1.12 x (0.083 + (0.914 x measured Scys)). We then selected the AusDiab (Australian Diabetes, Obesity, and Lifestyle Study), which measured the Scys values in 2010 using the Roche immunoturbidimetric assay, to transform the PETIA assay results: IFCC Scys (mg/L) = 1.12 x (-0.25 + (1.07 x measured Scys)). Both the ARIC study and the AusDiab study had more female patients than our prospective cohort (respectively 57.1% and 55.2% vs. 29.2%). Patients included in the
AusDiab study had a similar renal function on average with our patients (standardized Scr-based MDRD equation, 78.9 ± 15.2 vs. 79.7 ± 27.1mL/min/1.73m²). In contrast, patients in the ARIC study had generally higher eGFR than our cohort, with an average eGFR of 84.0 ± 17.0mL/min/1.73m² in the lowest quartile patients with relatively low renal function. But instead, unlike other source studies that adopted the PENIA method, the ARIC study used the same BN-II system as ours. Also, systemic drift had the least impact because the ARIC study most recently measured Scys. Thus, in addition to the AusDiab study, we adopted the conversion formula of the ARIC study as the standardization method for our research.

**Calculation of the Scr- and Scys-based eGFR**

Using the standardized Scr and Scys values as described above, we retrospectively evaluated the renal function of the study subjects. The equations for calculating eGFR were as follows.

CKD-EPI creatinine equation (2009)\(^{25}\):

\[
eGFR = 141 \times \min \left( \frac{\text{Scr}}{\kappa}, 1 \right)^{\alpha} \times \max \left( \frac{\text{Scr}}{\kappa}, 1 \right)^{-1.209} \times 0.993^{\text{Age}} \times \left[ 1.018 \times \left( \text{if female} \right) \right]
\]

Abbreviations and units are as follows; eGFR (estimated glomerular filtration rate, mL/min/1.73m²), Scr (standardized serum creatinine, mg/dL), \(\kappa = 0.7\) (females) or 0.9 (males), \(\alpha = -0.329\) (females) or -0.411 (males), \(\min = \) the minimum of \(\text{Scr}/\kappa\) or 1, \(\max = \) the maximum of \(\text{Scr}/\kappa\) or 1, and age in years.

CKD-EPI cystatin C equation (2012)\(^{31}\):

\[
eGFR = 133 \times \min \left( \frac{\text{Scys}}{0.8}, 1 \right)^{-0.499} \times \max \left( \frac{\text{Scys}}{0.8}, 1 \right)^{-1.328} \times 0.996^{\text{Age}} \times \left[ 0.932 \times \left( \text{if female} \right) \right]
\]

Abbreviations and units are as follows; Scys (standardized serum cystatin C, mg/L), \(\min = \) the minimum of \(\text{Scys}/0.8\) or 1, \(\max = \) the maximum of \(\text{Scys}/0.8\) or 1, and age in years.
Table S1. Comparison of baseline characteristics between study participants and non-participants.

|                              | Total eligible population (n=3365) | Participants (n=1928, 57.3%) | Non-participants (n=1437, 42.7%) | P value |
|------------------------------|-----------------------------------|-------------------------------|----------------------------------|---------|
| **Demographics and risk factors** |                                   |                               |                                  |         |
| Men                          | 2383 (70.8%)                      | 1365 (70.8%)                  | 1018 (70.8%)                     | >0.999  |
| Age (year)                   | 65.5 ± 10.4                       | 65.2 ± 9.9                    | 65.8 ± 10.9                      | 0.093   |
| BMI (kg/m²)                  | 24.5 ± 3.1                        | 24.9 ± 3.0                    | 24.1 ± 3.3                       | <0.001  |
| Hypertension                 | 2217 (65.9%)                      | 1321 (68.5%)                  | 896 (62.4%)                      | <0.001  |
| Diabetes mellitus            | 1322 (39.3%)                      | 774 (40.1%)                   | 548 (38.1%)                      | 0.252   |
| History of myocardial infarction | 267 (7.9%)                      | 168 (8.7%)                    | 99 (6.9%)                        | 0.061   |
| Previous revascularization   | 698 (20.7%)                       | 395 (20.5%)                   | 303 (21.1%)                      | 0.704   |
| History of cerebrovascular accident | 326 (9.7%)                      | 189 (9.8%)                    | 137 (9.5%)                       | 0.840   |
| Dyslipidemia or statin user  | 2294 (68.2%)                      | 1431 (74.2%)                  | 863 (60.1%)                      | <0.001  |
| Current smoker               | 778 (23.1%)                       | 419 (21.7%)                   | 359 (25.0%)                      | 0.030   |
| Presented as acute MI        | 753 (22.4%)                       | 160 (8.3%)                    | 593 (41.3%)                      | <0.001  |
Left ventricular ejection fraction (%)  
57.4 ± 10.4  59.4 ± 9.3  54.8 ± 11.3  <0.001

**Angiographic and procedural characteristics**

**Extent of coronary artery disease**

| 1-VD | 2-VD | 3-VD | 0.444 |
|------|------|------|-------|
| 1051 (31.2%) | 600 (31.1%) | 451 (31.4%) | |
| 1143 (34.0%) | 671 (34.8%) | 472 (32.8%) | |
| 1171 (34.8%) | 657 (34.1%) | 514 (35.8%) | |

**LM disease**

| 356 (10.6%) | 201 (10.4%) | 155 (10.8%) | 0.779 |
|-------------|-------------|-------------|-------|
| 1041 (30.9%) | 561 (29.1%) | 480 (33.4%) | 0.008 |

**Multiple target lesions**

| 2884 (85.7%) | 1647 (85.4%) | 1237 (86.1%) | 0.625 |
|---------------|---------------|---------------|-------|
| 194 (5.8%) | 105 (5.4%) | 89 (6.2%) | 0.398 |

**Intervention for bifurcation lesion**

| 2098 (62.3%) | 1180 (61.2%) | 918 (63.9%) | 0.121 |
|--------------|--------------|-------------|-------|
| 464 (13.8%) | 261 (13.5%) | 203 (14.1%) | 0.660 |

**Procedural success**

| 3348 (99.5%) | 1922 (99.7%) | 1426 (99.2%) | 0.111 |
|--------------|--------------|-------------|-------|

Values are described as numbers (%) or mean ± standard deviation.

ACE, angiotensin-converting enzyme; ARB, angiotensin II receptor blocker; BMI, body mass index; CCB, calcium channel blocker; LM, left main; MI, myocardial infarction; PCI, percutaneous coronary intervention; STEMI, ST-segment elevation myocardial infarction; VD, vessel disease.
Table S2. Baseline characteristics of study population according to 3-year mortality.

| Demographics and risk factors | Total population (n=1928) | Mortality (+) (n=102, 5.3%) | Mortality (-) (n=1826, 94.7%) | P value |
|------------------------------|---------------------------|----------------------------|-------------------------------|---------|
| Men                          | 1365 (70.8%)              | 77 (75.5%)                 | 1288 (70.5%)                 | 0.284   |
| Age (year)                   | 65.2 ± 9.9                | 70.8 ± 9.8                 | 64.9 ± 9.9                   | <0.001  |
| Age ≥65                      | 1086 (56.3%)              | 81 (79.4%)                 | 1005 (55.0%)                 | <0.001  |
| Hypertension                 | 1321 (68.5%)              | 77 (75.5%)                 | 1244 (68.1%)                 | 0.119   |
| Diabetes mellitus            | 774 (40.1%)               | 54 (52.9%)                 | 720 (39.4%)                  | 0.007   |
| History of myocardial infarction | 168 (8.7%)               | 13 (12.7%)                 | 155 (8.5%)                   | 0.138   |
| Previous revascularization   | 395 (20.5%)               | 22 (21.6%)                 | 373 (20.4%)                  | 0.781   |
| History of cerebrovascular accident | 189 (9.8%)              | 18 (17.6%)                 | 171 (9.4%)                   | 0.006   |
| Dyslipidemia or statin user  | 1431 (74.2%)              | 64 (62.7%)                 | 1367 (74.9%)                 | 0.006   |
| Current smoker               | 419 (21.7%)               | 24 (23.5%)                 | 395 (21.6%)                  | 0.651   |
| Presented as acute MI        | 160 (8.3%)                | 18 (17.6%)                 | 142 (7.8%)                   | <0.001  |
| Left ventricular ejection fraction (%) | 59.3 ± 9.3               | 53.9 ± 14.1                | 59.7 ± 8.8                   | <0.001  |
**Angiographic and procedural characteristics**

| Extent of coronary artery disease |   |   |   |
|-----------------------------------|---|---|---|
| 1-VD                              | 600 (31.1%) | 21 (20.6%) | 579 (31.7%) |
| 2-VD                              | 671 (34.8%) | 33 (32.4%) | 638 (34.9%) |
| 3-VD                              | 657 (34.1%) | 48 (47.1%) | 609 (34.4%) |
| LM disease                        | 201 (10.4%) | 18 (17.6%) | 183 (10.0%) |
| Multiple target lesions           | 561 (29.1%) | 35 (34.3%) | 526 (28.8%) |
| Intervention for type B2/C lesion | 1647 (85.4%) | 90 (88.2%) | 1557 (85.3%) |
| Intervention for in-stent restenosis | 105 (5.4%) | 11 (10.8%) | 94 (5.1%) |
| Intervention for bifurcation lesion | 1180 (61.2%) | 63 (61.8%) | 1117 (61.2%) |
| Side branch treatment             | 261 (13.5%) | 16 (15.7%) | 245 (13.4%) |
| Procedural success                | 1922 (99.7%) | 101 (99.0%) | 1821 (99.7%) |

**Medications at discharge**

|                |   |   |   |
|----------------|---|---|---|
| Aspirin        | 1916 (99.4%) | 100 (98.0%) | 1816 (99.5%) |
| Clopidogrel    | 1906 (98.9%) | 100 (98.0%) | 1806 (98.9%) |
| Dual antiplatelet therapy | 1899 (98.5%) | 100 (98.0%) | 1799 (98.5%) |

*P-values are provided for each category.*
| medication          | sample 1  | sample 2  | sample 3  | p-value |
|---------------------|-----------|-----------|-----------|---------|
| Beta blockers       | 1019 (52.9%) | 55 (53.9%) | 964 (52.8%) | 0.824   |
| ACE inhibitors      | 246 (12.8%)  | 18 (17.6%) | 228 (12.5%) | 0.128   |
| ARBs                | 743 (38.5%)  | 43 (42.2%) | 700 (38.3%) | 0.440   |
| Statins             | 1716 (89.0%) | 72 (70.6%) | 1644 (90.0%) | <0.001  |
| CCBs                | 669 (34.7%)  | 36 (35.3%) | 633 (34.7%) | 0.897   |

**Body habitus, Scr, Scys and eGFR**

| parameter               | sample 1  | sample 2  | sample 3  | p-value |
|-------------------------|-----------|-----------|-----------|---------|
| Body weight (kg)        | 66.0 ± 10.3 | 62.8 ± 10.2 | 66.2 ± 10.3 | 0.001   |
| BMI (kg/m$^2$)          | 24.9 ± 2.9  | 23.7 ± 3.2 | 24.9 ± 2.9 | <0.001  |
| Scr (mg/dL)             | 1.11 ± 1.11 | 1.86 ± 2.17 | 1.07 ± 1.00 | <0.001  |
| Scys (mg/dL)            | 1.00 ± 0.81 | 1.81 ± 1.68 | 0.96 ± 0.71 | <0.001  |
| eGFR (mL/min/1.73m$^2$) |           |           |           |         |
| by Scr-based CKD-EPI equation | 78.7 ± 23.0 | 62.7 ± 31.5 | 79.6 ± 22.1 | <0.001  |
| by Scys-based CKD-EPI equation | 89.8 ± 26.7 | 62.3 ± 34.3 | 91.3 ± 25.4 | <0.001  |

**Baseline renal dysfunction**

| eGFR <60                        | sample 1  | sample 2  | sample 3  | p-value |
|---------------------------------|-----------|-----------|-----------|---------|
| by Scr-based CKD-EPI equation   | 347 (18.0%)  | 39 (38.2%) | 308 (16.9%) | <0.001  |
| by Scys-based CKD-EPI equation  | 259 (13.4%)  | 42 (41.2%) | 217 (11.9%) | <0.001  |
|                | Values | p-value |
|----------------|--------|---------|
| Scr/Scys       | 1.10 ± 0.26 | 0.98 ± 0.28 | 1.11 ± 0.25 | <0.001 |
| eGFRcys/eGFRcr | 1.16 ± 0.23 | 1.01 ± 0.28 | 1.17 ± 0.22 | <0.001 |

Values are described as numbers (%) or mean ± standard deviation.

ACE, angiotensin-converting enzyme; ARB, angiotensin II receptor blocker; BMI, body mass index; CCB, calcium channel blocker; CKD, chronic kidney disease; EPI, Epidemiology Collaboration; DAPT, dual antiplatelet therapy; eGFR, estimated glomerular filtration rate; LM, left main; MI, myocardial infarction; PCI, percutaneous coronary intervention; Scr, serum creatinine; Scys, serum cystatin C; STEMI, ST-segment elevation myocardial infarction; VD, vessel disease.
Table S3. Baseline characteristics of study population according to muscle mass estimated by ratio of estimated glomerular filtration rate by serum cystatin C to creatinine.

| Demographics and risk factors | Total population (n=1928) | Low-MM (n=601, 31.2%) | Normal-MM (n=1327, 68.8%) | P value |
|------------------------------|--------------------------|-----------------------|---------------------------|---------|
| Men                          | 1365 (70.8%)             | 459 (76.4%)           | 906 (68.3%)               | <0.001  |
| Age (year)                   | 65.2 ± 9.9               | 66.7 ± 10.3           | 64.5 ± 9.7                | <0.001  |
| Age ≥65                      | 1086 (56.3%)             | 379 (63.1%)           | 707 (53.3%)               | <0.001  |
| Hypertension                 | 1321 (68.5%)             | 435 (72.4%)           | 886 (66.8%)               | 0.014   |
| Diabetes mellitus            | 774 (40.1%)              | 265 (44.1%)           | 509 (38.4%)               | 0.017   |
| History of myocardial infarction | 168 (8.7%)             | 69 (11.5%)            | 99 (7.5%)                 | 0.004   |
| Previous revascularization   | 395 (20.5%)              | 115 (19.1%)           | 280 (21.1%)               | 0.322   |
| History of cerebrovascular accident | 189 (9.8%)            | 55 (9.2%)             | 134 (10.1%)               | 0.517   |
| Dyslipidemia or statin user  | 1431 (74.2%)             | 430 (71.5%)           | 1001 (75.4%)              | 0.071   |
| Current smoker               | 419 (21.7%)              | 158 (26.3%)           | 261 (19.7%)               | 0.001   |
| Presented as acute MI        | 160 (8.3%)               | 51 (8.5%)             | 109 (8.2%)                | 0.841   |
Left ventricular ejection fraction (%)  | 59.3 ± 9.3 | 58.1 ± 10.8 | 59.9 ± 8.5 | 0.001

**Angiographic and procedural characteristics**

Extent of coronary artery disease  | 0.892

| 1-VD | 2-VD | 3-VD | LM disease | 0.916 |
|------|------|------|------------|-------|
| 600 (31.1%) | 183 (30.4%) | 417 (31.4%) | 201 (10.4%) |
| 671 (34.8%) | 213 (35.4%) | 458 (34.5%) | 62 (10.3%) |
| 657 (34.1%) | 205 (34.1%) | 452 (34.1%) | 139 (10.5%) |

Multiple target lesions  | 0.155

| 561 (29.1%) | 188 (31.3%) | 373 (28.1%) |

Intervention for type B2/C lesion  | 0.241

| 1647 (85.4%) | 505 (84.0%) | 1142 (86.1%) |

Intervention for in-stent restenosis  | 0.174

| 105 (5.4%) | 39 (6.5%) | 66 (5.0%) |

Intervention for bifurcation lesion  | 0.260

| 1180 (61.2%) | 379 (63.1%) | 801 (60.4%) |

Side branch treatment  | 0.272

| 261 (13.5%) | 89 (14.8%) | 172 (13.0%) |

Procedural success  | 0.319

| 1922 (99.7%) | 598 (99.5%) | 1324 (99.8%) |

**Medications at discharge**

Aspirin  | 0.058

| 1916 (99.4%) | 594 (98.8%) | 1322 (99.6%) |

Clopidogrel  | 0.597

| 1906 (98.9%) | 593 (98.7%) | 1313 (98.9%) |
| Medication          | N (%)           | N (%)           | N (%)           | P-value |
|--------------------|-----------------|-----------------|-----------------|---------|
| Dual antiplatelet therapy | 1899 (98.5%)    | 590 (98.2%)     | 1309 (98.6%)    | 0.428   |
| Beta blockers      | 1019 (52.9%)    | 323 (53.7%)     | 696 (52.4%)     | 0.598   |
| ACE inhibitors     | 246 (12.8%)     | 93 (15.5%)      | 153 (11.5%)     | 0.016   |
| ARBs               | 743 (38.5%)     | 227 (37.8%)     | 516 (38.9%)     | 0.641   |
| Statins            | 1716 (89.0%)    | 522 (86.9%)     | 1194 (90.0%)    | 0.042   |
| CCBs               | 669 (34.7%)     | 211 (35.1%)     | 458 (34.5%)     | 0.800   |

**Body habitus, Scr, Scys and eGFR**

| Parameter          | Mean ± SD       | Mean ± SD       | Mean ± SD       | P-value |
|--------------------|-----------------|-----------------|-----------------|---------|
| Body weight (kg)   | 66.0 ± 10.3     | 65.3 ± 10.2     | 66.4 ± 10.4     | 0.047   |
| BMI (kg/m\(^2\))  | 24.9 ± 2.9      | 24.6 ± 3.1      | 25.0 ± 2.9      | 0.008   |
| Scr (mg/dL)        | 1.11 ± 1.11     | 1.06 ± 0.95     | 1.14 ± 1.17     | 0.158   |
| Scys (mg/dL)       | 1.00 ± 0.81     | 1.19 ± 0.96     | 0.92 ± 0.72     | <0.001  |
| eGFR (mL/min/1.73m\(^2\)) |                |                 |                 |         |
| by Scr-based CKD-EPI equation | 78.7 ± 23.0    | 81.5 ± 24.4     | 77.4 ± 22.2     | <0.001  |
| by Scys-based CKD-EPI equation | 89.8 ± 26.7    | 77.1 ± 26.9     | 95.6 ± 24.5     | <0.001  |

Baseline renal dysfunction

| Parameter                                | N (%)           | N (%)           | N (%)           | P-value |
|------------------------------------------|-----------------|-----------------|-----------------|---------|
| eGFR <60 by Scr-based CKD-EPI equation   | 347 (18.0%)     | 98 (16.3%)      | 249 (18.8%)     | 0.193   |
| eGFR <60 by Scys-based CKD-EPI equation | 259 (13.4%) | 140 (23.3%) | 119 (9.0%) | <0.001 |
|--------------------------------------|------------|------------|------------|----------|
| Scr/Scys                             | 1.10 ± 0.26| 0.89 ± 0.17| 1.20 ± 0.23| <0.001 |
| eGFRcys/eGFRcr                       | 1.16 ± 0.23| 0.94 ± 0.14| 1.26 ± 0.18| <0.001 |

Values are described as numbers (%) or mean ± standard deviation.

ACE, angiotensin-converting enzyme; ARB, angiotensin II receptor blocker; BMI, body mass index; CCB, calcium channel blocker; CKD, chronic kidney disease; EPI, Epidemiology Collaboration; DAPT, dual antiplatelet therapy; eGFR, estimated glomerular filtration rate; LM, left main; Low-MM, low muscle mass; MI, myocardial infarction; PCI, percutaneous coronary intervention; Scr, serum creatinine; Scys, serum cystatin C; STEMI, ST-segment elevation myocardial infarction; VD, vessel disease.
Figure S1. Association of Low Muscle Mass with 3-Year Risk of All-Cause Death.

(A) Lower Muscle Mass by Scr/Scys Higher 3-Year Mortality Risk
Unadjusted HR 1.22 (1.13-1.33) Per 0.1 decrease

Mortality rate 5.3%

Scr/Scys

(B) Lower Muscle Mass by eGFRcys/eGFRcr Higher 3-Year Mortality Risk
Unadjusted HR 1.38 (1.27-1.52) Per 0.1 decrease

Mortality rate 5.3%
eGFRcys/eGFRcr

eGFR, estimated glomerular filtration rate; HR, hazard ratio; Scr, serum creatinine; Scys, serum cystatin C.
Figure S2. Distribution of Scr/Scys and eGFRcys/eGFRcr by Sex.

(A) Scr/Scys

(B) eGFRcys/eGFRcr

eGFR, estimated glomerular filtration rate; Scr, serum creatinine; Scys, serum cystatin C.
Figure S3. Time-dependent ROC Analysis and Optimal Discriminative Cut-Points for 3-Year Mortality.

| Time-dependent ROC analysis and optimal discriminative cut-points for clinical events | 1st quartile | Optimal cut-off value | P-value | Cumulative percent (%) | Selected cut-points |
|---|---|---|---|---|---|
| Scr/Scys | All studied patients | 0.864 | 0.979 | 1.9519x10⁻⁸ | 31.59 | 1.0 | 34.75 |
| | Men | 0.986 | 1.006 | 6.4558x10⁻⁷ | 21.84 | 1.0 | 20.66 |
| | Women | 0.780 | 0.837 | 0.0015 | 33.75 | 0.8 | 25.93 |
| eGFRcsy/eGFRcr | All studied patients | 0.976 | 1.029 | 3.2581x10⁻¹² | 23.06 | 1.0 | 18.88 |
| | Men | 1.012 | 1.092 | 4.9388x10⁻⁸ | 31.28 | 1.1 | 33.70 |
| | Women | 0.971 | 1.008 | 1.0537x10⁻⁵ | 27.71 | 1.0 | 25.40 |

*cf.* The cut-off values of the surrogates were rounded off to avoid over-fitting and make the surrogates more practical and easy to apply. We have chosen cut-point values to be more predictable, especially for 3-year all-cause mortality.

ROC, receiver operating characteristics; otherwise as in Figure S2.
Figure S4. Determining Best Cut-Off Values using U Statistics according to Sex.

BCV, best cut-off value; otherwise as in Figure S2.
Figure S5. Log-Minus-Log Curves of All-Cause Mortality.

(A) Low-MM Group By Scr/Scys
(B) Low-MM Group By eGFRcys/eGFRcr

- eGFR, estimated glomerular filtration rate; Low-MM, low muscle mass; Scr, serum creatinine; Scys, serum cystatin C.