***Supplementary Digital File***

**Diagnostic and prognostic value of cystatin C in acute coronary syndrome:**

**An up-to-date meta-analysis**

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## **Supplementary Table 1.** PRISMA checklist

| **Section and Topic**  | **Item #** | **Checklist item**  | **Location where item is reported**  |
| --- | --- | --- | --- |
| **TITLE**  |  |
| Title  | 1 | Identify the report as a systematic review. | 1 |
| **ABSTRACT**  |  |
| Abstract  | 2 | See the PRISMA 2020 for Abstracts checklist. | 4 |
| **INTRODUCTION**  |  |
| Rationale  | 3 | Describe the rationale for the review in the context of existing knowledge. | 6-8 |
| Objectives  | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | 8 |
| **METHODS**  |  |
| Eligibility criteria  | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | 9, 10 |
| Information sources  | 6 | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | 9 |
| Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | 9 |
| Selection process | 8 | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | 9 |
| Data collection process  | 9 | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | 9 |
| Data items  | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | 10 |
| 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | 10 |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | 11 |
| Effect measures  | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | 11 |
| Synthesis methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | 11 |
| 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | 11 |
| 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | 11 |
| 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | 11 |
| 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | 11 |
| 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | 11 |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | 11 |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | 11 |
| **RESULTS**  |  |
| Study selection  | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | 14-17 |
| 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | 14-17 |
| Study characteristics  | 17 | Cite each included study and present its characteristics. | 14-17 |
| Risk of bias in studies  | 18 | Present assessments of risk of bias for each included study. | 14-17 |
| Results of individual studies  | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | 14-17 |
| Results of syntheses | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | 14-17 |
| 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | 14-17 |
| 20c | Present results of all investigations of possible causes of heterogeneity among study results. | 14-17 |
| 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | 14-17 |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | 14-17 |
| Certainty of evidence  | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | 14-17 |
| **DISCUSSION**  |  |
| Discussion  | 23a | Provide a general interpretation of the results in the context of other evidence. |  |
| 23b | Discuss any limitations of the evidence included in the review. | 17 |
| 23c | Discuss any limitations of the review processes used. | 17 |
| 23d | Discuss implications of the results for practice, policy, and future research. | 17 |
| **OTHER INFORMATION** |  |
| Registration and protocol | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | 9 |
| 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | 9 |
| 24c | Describe and explain any amendments to information provided at registration or in the protocol. | 9 |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | 24 |
| Competing interests | 26 | Declare any competing interests of review authors. | 24 |
| Availability of data, code and other materials | 27 | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | 24 |

## **Supplementary Table 2.** Major adverse cardiovascular event (MACE) definition across studies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study** | **MACE composition** |  |  |  |
| **Cardiovascular death** | **All-cause mortality** | **Reinfarction** | **ACS requiring rehospitalization** | **Acute heart failure requiring rehospitalization** | **PCI or CABG** | **Stroke** | **Ventricular arrhythmia** | **Bleeding**  |
| Abid et al., 2016 | x | x | x | x | x |  |  |  |  |
| Akgul et al., 2013 | x |  | x |  |  | x |  |  |  |
| Correa et al., 2018 | x |  | x |  |  |  | x |  |  |
| Ge et al., 2009 | x |  | x |  |  | x |  |  |  |
| Grufman et al., 2018 | x |  | x |  |  |  |  |  |  |
| Ix et al., 2007 | x |  | x |  |  |  | x |  |  |
| Kallel et al., 2012 | X | x | x |  |  |  | x | x |  |
| Kaski et al., 2010 |  | x | x |  |  |  |  |  |  |
| Kilic et al., 2009 | X |  | x |  |  |  |  |  |  |
| López-Cuenca et al., 2013 |  | x | x |  |  | x |  |  | x |
| Ma et al., 2020 |  | x | x |  | X |  |  |  |  |
| Mao et al., 2019 | X |  | x |  | x | x | x |  |  |
| Obeid et al., 2020 | x |  | x |  |  | x |  |  |  |
| Přeček et al., 2018 |  | x | x |  |  |  | X |  |  |
| Ristiniemi et al., 2012 |  | x | x |  |  |  |  |  |  |
| Sai et al. 2015 | X |  | x |  | x |  | X |  |  |
| Shantsila et al., 2015 |  | x | x |  | x | x |  |  |  |
| Shen et al., 2018 |  | x | x |  | x | x |  |  |  |
| Shlipak et al., 2008 | X |  | x |  |  |  | X |  |  |
| Silva et al., 2012 |  | x | x |  |  |  |  |  |  |
| Sun et al., 2012 |  | x | x |  | x | x | X |  |  |
| Taglieri et al., 2010 | X | x | x |  |  |  |  |  |  |
| Tayeh et al., 2012 |  | x | x |  | x |  | X |  |  |
| Vaduganathan et al., 2019 | x | x | x |  | x |  | X |  |  |
| von Jeinsen et al., 2017 |  | x | x |  |  |  |  |  |  |
| Wasyanto et al., 2023 |  | x | x |  | x |  | x |  |  |
| Wei et al., 2013 |  | x | x |  |  | X |  |  |  |
| Widera et al., 2013 | x | x | x |  |  |  |  |  |  |

## **Supplementary Table 3.** Baseline characteristics of include

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Country** | **Study design** | **Study group** | **Population** | **Age** | **Male gander, no(%)** | **BMI** | **LVEF %** | **Comorbidities** | **NOS** **Score** |
| **HTN** | **DM** | **DL** |
| Abed et al., 2020 | Iraq | CCS | ACS | 136 | 59.3 ± 13.1 | 92 (67.7) | 27.2 ± 4.6 | 50.5 ± 10.7 | 74 (54.4) | 60 (66.9) | NS | 8 |
| Control | 94 | 51.9 ± 12.1 | 83 (88.3) | 26.8 ± 4.5 | 57.0 ± 6.9 | NS | 16 (16.8) | NS |
| LCysC | 89 | NS | 48 (53.9) | NS | NS | 56 (62.9) | 38 (42.7) | NS |
| HCysC | 47 | NS | 40 (81.6) | NS | NS | 22 (46.8) | 21 (44.7) | NS |
| Abid et al., 2016 | Tunisia | PS | STEMI | 84 | 59.2 ± 10.5 | 70 (83.3) | 30.2 ± 5.7 | 48.1 ± 9.6 | 35 (41.6) | 39 (46.4) | 23 (27.3) | 8 |
| NSTEMI | 43 | 56.2 ± 13.6 | 35 (81.4) | 28.4 ± 9.6 | 54.5 ± 8.9 | 17 (39.5) | 19 (44.1) | 10 (23.2) |
| Akgul et al., 2013 | Turkey | PS | LCysC | 316 | 52.3 ± 10.5 | 260 (82.3) | NS | NS | 93 (29.4) | 52 (16.4) | NS | 8 |
| HCysC | 159 | 62.8 ± 13.1 | 120 (75.5) | NS | NS | 71 (44.7) | 42 (26.4) | NS |
| Bai et al., 2021 | China | RS | Survival | 420 | 63.2 ± 5.3 | 322 (77) | NS | NS | 256 (61) | 83 (20) | NS | 7 |
| Death | 69 | 69.5 ± 4.0 | 45 (65) | NS | NS | 41 (59) | 15 (22) | NS |
| Budano et al., 2020 | Italy | PS | LCysC | 579 | 65 ± 11 | 428 (73.9) | 26.6 ± 3.7 | NS | 436 (75.3) | 46 (7.9) | 364 (32.9) | 8 |
| HCysC | 134 | 71 ± 9 | 92 (68.7) | 26.6 ± 4.1 | NS | 103 (85.1) | 23 (17.2) | 65 (48.5) |
| Chen et al., 2019 | China | RS | LCysC | 192 | 55.3 ± 10.4 | 447 (85.3) | 24.1 ± 2.9 | NS | 205 (39.1) | 74 (14.1) | 92 (17.6) | 8 |
| HCysC | 524 | 63.5 ± 10.5 | 160 (82.5) | 23.5 ± 2.9 | NS | 99 (51.0) | 24 (12.4) | 30 (15.5) |
| Chen et al., 2021 | China | PS | AMI | 197 | 65.3 ± 10 | 148 (75.1) | NS | NS | 133 (67.7) | 55 (27.8) | NS | 8 |
| UAP | 237 | 64.6 ± 10.8 | 164 (69.2) | NS | NS | 142 (237) | 55 (23.2) | NS |
| Correa et al., 2018 | USA | RCT | LCysC | 2502 | 61.8 ± 3.2 | 1906 (76.2) | 27.7 ± 1.4 | NS | 1740 (69.5) | 872 (34.9) | 1681 (67.2) | 8 |
| HCysC | 2463 | 67.8 ± 3.7 | 1775 (72.1) | 28.1 ± 1.6 | NS | 1938 (78.7) | 801 (32.5) | 1574 (63.9) |
| de Hoog et al., 2012 | The Netherlands | PS | ACS | 140 | 67.7±12.6 | 92 (65.7) | NS | NS | 79 (58) | 25 (18) | 56 (41) | 8 |
| Control | 331 | 60.1±14.5 | 171 (51.7) | NS | NS | 121 (37) | 47 (14) | 93 (28) |
| Derzhko et al., 2009 | Poland | PCS | STEMI | 150 | 57.0±11.3 | 95 (63) | 26.7 ± 4.0 | 52.1 ± 8.9 | 108 (72) | 42 (28) | NS | 7 |
| Control | 42 | 58.6±7.5 | 27 (64) | 25.5 ± 1.0 | 72.0 ± 4.6 | 0 (0.0) | 0 (0.0) | NS |
| Dong et al., 2023 | China | PS | NSTEMI | 212 | 64.2±14.3 | 133 (62.7) | 25.4 ± 5.4 | NS | 105 (49.5) | 40 (18.9) | NS | 7 |
| Control | 60 | 63.6±8.0 | 37 (61.7) | 24.3 ± 2.8 | NS | 29 (48.3) | 15 (25.0) | NS |
| Eggers et al., 2010 | Sweden | RS | Survive | 353 | 63.5±4.5 | 225 (63.7) | NS | NS | 129 (36.5) | 53 (15.0) | 128 (36.3) | 7 |
| Dead | 92 | 75.3±4.3 | 68 (73.9) | NS | NS | 53 (57.6) | 24 (26.1) | 35 (38.0) |
| Ferraro et al., 2009 | Italy | PS | STEMI | 90 | 62.8±12 | 71 (78.9) | NS | 51.4± 4.6 | 59 (65.5) | 12 (13.3) | 30 (33.3) | 8 |
| NSTEMI | 42 | 64.3±15.5 | 27 (64.0) | NS | 51.1± 5.1 | 21 (50.0) | 9 (21.4) | 15 (35.7) |
| Flores-Blanco et al., 2016 | Spain | PS | MACE (+) | 31 | 80 ± 7 | 17 (55) | 30 ± 7 | 52 ± 5 | 28 (90) | 19 (61) | 21 (68) | 8 |
| MACE (-) | 318 | 67 ± 11 | 227 (71) | 29 ± 4 | 59.5 ± 3 | 249 (78) | 148 (47) | 198 (62) |
| Fu et al., 2018 | China | PS | AMI | 135 | 82.7 ± 2.5 | 99 (73.3) | 24.7 ± 3.2 | 50.2 ± 10.1 | 95 (70.4) | 46 (34.1) | 20 (14.8) | 8 |
| UAP | 564 | 82.0 ± 2.0 | 402 (71.3) | 24.7 ± 3.4 | 56.7 ± 9.3 | 443 (78.5) | 195 (34.6) | 135 (23.9) |
| Control | 93 | 81.6 ± 2.0 | 60 (64.5) | 24.3 ± 3.8 | 60.3 ± 7.0 | 76 (81.7) | 22 (23.7) | 23 (24.7) |
| García Acuña et al., 2009 | Spain | PS | LCysC | 90 | 59.2 ± 12.3 | 75 (83.3) | NS | 56 | 38 (42.2) | 29 (32.2) | 45 (50) | 7 |
| HCysC | 113 | 72.5 ± 10.7 | 82 (72.5) | NS | 51 | 79 (69.9) | 43 (38.1) | 59 (52.2) |
| Ge et al., 2009 | China | PS | AMI | 36 | 62.2 ± 12.0 | 30 (83.3) | NS | NS | 22 (61.1) | 4 (11.1) |  26 (72.2) | 7 |
| UAP | 56 | 60.7 ± 11.3 | 48 (85.7) | NS | NS | 24 (42.9) | 14 (25.0) | 44 (78.6) |
| Control | 34 | 59.3 ± 7.4 | 22 (64.7) | NS | NS | 10 (29.4) | 0 (0.0) | 14 (41.2) |
| Grufman et al., 2018 | Sweden | PS | MACE (+) | 75 | 79.3 ± 3.3 | 52 (69) | 26 (24-29) | NS | 49 (65) | 22 (29) | NS | 8 |
| MACE (-) | 449 | 66 ± 4 | 331 (74) | 27 (24-30) | NS | 235 (52) | 104 (23) | NS |
| Huang et al., 2019 | China | PS | ACS | 184 | 72.7 ± 3.3 | 116 (63.0) | NS | NS | 131 (71.2) | 57 (31.0) | NS | 7 |
| Control | 46 | 72.8 ± 2.6 | 21 (45.7) | NS | NS | 31 (67.4) | 8 (17.4) | NS |
| Ischimoto et al., 2009 | Japan | PS | LCysC | 38 | 61.9 ± 10.4 | 35 (92.1) | NS | 53.3 ± 9.3 | 23 (60.5) | 19 (50.0) | 25 (65.8) | 8 |
| HCysC | 33 | 66.5 ± 12.6 | 27 (81.8) | NS | 49.4 ± 11.7 | 16 (48.5) | 14 (42.4) | 21 (63.6) |
| Ix et al., 2007 | USA | PS | LCysC | 487 | 63 ± 9.7 | 374 (76.8) | NS | NS | 319 (65.5) | 118 (24.2) | NS | 7 |
| HCysC | 503 | 70 ± 10.5 | 432 (85.9) | NS | NS | 376 (74.8) | 142 (28.2) | NS |
| Jernberg et al., 2004 | Sweden | PS | LCysC | 365 | 61.3 ± 6.9 | 223 (45.8) | NS | NS | 128 (35.1) | 45 (12.3) | NS | 7 |
| HCysC | 361 | 75.5 ± 3.6 | 216 (42.9) | NS | NS | 173 (47.9) | 78 (21.6) | NS |
| Kallel et al., 2012 | France | RCT | MACE (+) | 136 | 62.8 ± 10.5 | 97 (71.3) | 27.8 ± 3.8 | NS | 105 (77) | 43 (32) | NS | 8 |
| MACE (-) | 1537 | 61.2 ± 9.5 | 1214 (79.0) | 27.7 ± 3.9 | NS | 1151 (75) | 240 (16) | NS |
| Kaski et al., 2010 | Spain | PS | MACE (+) | 54 | 67.2 ± 10.9 | 43 (79) | 28.5 ± 4.2 | 54 ± 14 | 36 (68) | 20 (38) | 32 (60) | 8 |
| MACE (-) | 556 | 64.5 ± 11.3 | 406 (73) | 27.6 ± 4.2 | 60 ± 12 | 331 (60) | 159 (29) | 300 (54) |
| Keller et al., 2009 | Germany | PS | Survive | 66 | 64.7 ± 9.8 | 55 (83.3) | 27.6 ± 3.9 | NS | 53 (80.3) | 20 (30.3) | NS | 8 |
| Dead | 1761 | 60.6±9.8 | 1429 (81.2) | 27.8 ± 4.0 | NS | 1326 (75.3) | 337 (19.1) | NS |
| Kilic et al., 2009 | Turkey | PS | MACE (+) | 42 | 61 ± 10 | 23 (54.8) | NS | 34 ± 16  | 34 (81.0) | 23 (54.8) | 23 (54.8) | 7 |
| MACE (-) | 118 | 59 ± 10 | 89 (75.4) | NS | 42 ± 17 | 61 (68.5) | 31 (26.3) | 57 (48.3) |
| Le et al., 2023 | China | PS | AMI | 37 | 67.6 ± 7.7 | 22 (59.5) | 23.6 ± 2.3 | NS | 20 (54.1) | 18 (48.6) | NS | 8 |
| UAP | 36 | 66.0 ± 7.8 | 21 (58.3) | 23.0 ± 2.4 | NS | 18 (50.0) | 17 (47.2) | NS |
| Control | 31 | 66.9 ± 8.0 | 18 (58.1) | 24 ± 2 | NS | 9 (25.7) | 9 (25.7) | NS |
| Lodh et al., 2013 | India | PS | ACS | 150 | 54.9 ± 10.8 | NS | 30.4 ± 6.0 | 59 ± 10 | NS | NS | NS | 7 |
| Control | 150 | 56.2 ± 10.8 | NS | 28.7 ± 3.7 | 66 ± 8 | NS | NS | NS |
| Lou et al., 2022 | China | RS | LCysC | 4184 | 60.7 ± 11.7 | 3385 (80.9) | NS | 51.6 ± 9.7 | NS | NS | NS | 7 |
| HCysC | 1722 | 65.8 ± 12.2 | 1354 (78.6) | NS | 49.3 ± 10.3 | NS | NS | NS |
| López-Cuenca et al., 2013 | Spain | PS | MACE (+) | 25 | 76 ± 9 | 16 (64.0) | 30 ± 4 | 54 ± 6 | 21 (84) | 15 (60) | 15 (60) | 8 |
| MACE (-) | 248 | 67 ± 12 | 170 (72.2) | 29 ± 4 | 59.3 ± 3.3 | 192 (77) | 113 (46) | 136 (55) |
| Ma et al., 2020 | China | PS | STEMI | 48 | 69.3 ± 9.5 | 24 (50.0) | 24.3 ± 0.2 | NS | 25 (52.1) | 11 (22.9) | NS | 8 |
| NSTEMI | 23 | 70.9 ± 11.2 | 12 (52.2) | 22.5 ± 8.6 | NS | 13 (56.5) | 5 (21.7) | NS |
| UAP | 25 | 71.4 ± 10.8 | 12 (48.0) | 25.6 ± 12.3 | NS | 14 (56.0) | 5 (20.0) | NS |
| Control | 20 | 69.5 ± 10.2 | 11 (55.0) | 23.2 ± 0.9 | NS | 12 (60.0) | 4 (20.0) | NS |
| Mao et al., 2019 | China | PS | LCysC | 211 | 57.5 ± 10.1 | 142 (67.3) | 24.4 ± 3.3 | NS | 70 (33.2) | 56 (26.5) | NS | 8 |
| HCysC | 211 | 63.6 ± 9.1 | 141 (66.8) | 24.1 ± 3.2 | NS | 62 (29.4) | 76 (36.0) | NS |
| Nato et al., 2005 | Italy | CS | AMI | 61 | 61 ± 9.7 | 48 (78.7) | NS | NS | NS | NS | NS | 7 |
| UAP | 61 | 59 ± 11.9 | 48 (78.7) | NS | NS | NS | NS | NS |
| Control | 61 | 59 ± 9.7 | 48 (78.7) | NS | NS | NS | NS | NS |
| Obeid et al., 2020 | Switzerland | PS | MACE (+) | 192 | NS | 151 (78.6) | NS | NS | 128 (66.7) | 59 (30.7) | 116 (60.4) | 8 |
| MACE (-) | 1640 | NS | 1299 (79.2) | NS | NS | 932 (56.8) | 278 (17.0) | 1013 (61.8) |
| Pan et al., 2021 | China | RS | ACS | 361 | 61.2 ± 10.2 | 290 (80.3) | 24.5 ± 4.1 | NS | 204 (56.5) | 85 (23.5) | NS | 8 |
| Control | 119 | 58.6 ± 9.0 | 62 (52.1) | 23.1 ± 5.3 | NS | 73 (61.3) | 11 (9.2) | NS |
| Přeček et al., 2018 | Czech Republic | PS | LCysC | 231 | 58 ± 9 | 181 (78.4) | NS | NS | NS | NS | NS | 8 |
| HCysC | 215 | 70.3 ± 9.8 | 145 (67.4) | NS | NS | NS | NS | NS |
| Rathnayake et al., 2017 | Sweden | PS | AMI | 200 | 62 ± 11 | 168 (84) | NS | NS | 83 (42) | 18 (9) | NS | 8 |
| Control | 200 | 63 ± 11 | 168 (84) | NS | NS | 67 (34) | 10 (5) | NS |
| Ristiniemi et al., 2012 | Finland | PS | LCysC | 84 | 62 ± 10.9 | 51 (60.7) | 27.4 ± 3.9 | NS | 26 (31.0) | 17 (20.2) | NS | 8 |
| HCysC | 79 | 76 ± 8.8 | 37 (46.8) | 27.4 ± 5.4 | NS | 27 (34.2) | 18 (22.8) | NS |
| Sai et al., 2015 | Japan | RS | LCysC | 139 | 63.6 ± 8.4 | 113 (81) | 24.5 ± 3.1 | 62.1 ± 9.5 | 106 (76) | 79 (57) | 110 (79) | 8 |
| HCysC | 138 | 65.5 ± 8.0 | 117 (85) | 24.4 ± 3.2 | 62.1 ± 10.9 | 104 (75) | 78 (57) | 102 (74) |
| Saito et al., 2022 | Japan | PS | LCysC | 455 | 61.6±11.0 | 406 (89.2) | 24.2 ± 3.8 | NS | 337 (74.1) | 155 (34.1) | NS | 8 |
| HCysC | 545 | 69.9±10.8 | 429 (78.7) | 24.2 ± 3.2 | NS | 394 (72.3) | 158 (29.0) | NS |
| Shaker et al., 2020 | Iraq | CSS | ACS | 136 | 57.3 ± 13 | 92 (67.7) | 28.3 ± 4.6 | NS | NS | NS | NS | 8 |
| Control | 94 | 31.9 ± 12 | 83 (88.3) | 26.8 ± 4.6 | NS | NS | NS | NS |
| LCysC | 89 | 56.0±13.6 | 50 (56.2) | 27.6 ± 4.2 | 52.1 ± 11.3 | NS | NS | NS |
| HCysC | 47 | 60.3±11.9 | 42 (91.3) | 26.5 ± 4.2 | 51.7 ± 7.4 | NS | NS | NS |
| Shalia et al., 2012 | India | PS | AMI | 48 | 50.7±10.9 | 35 (72.9) | NS | NS | 10 (20.4) | 11 (22.4) | NS |  |
| Control | 31 | 47.6±7.57 | 14 (45.2) | NS | NS | 0 (0.0) | 0 (0.0) | NS |
| Shantsila et al., 2015 | United Kingdom | PS | STEMI | 48 | 58 ± 12 | 41 (85.4) | 30 ± 6 | 54 ± 14 | 23 (47.9) | 16 (33.3) | NS | 7 |
| Control | 37 | 60 ± 14 | 31 (83.8) | 27 ± 4 | NS | 5 (13.5) | 0 (0.0) | NS |
| Shen et al., 2018 | China | RS | LCysC | 226 | 52.6±9.7 | 186 (82.3) | 24.2 ± 2.9 | 53.8 ± 4.3 | 76 (33.6) | 33 (14.6) | 46 (20.4) | 8 |
| HCysC | 221 | 63.6±10.2 | 186 (84.2) | 23.5 ± 2.8 | 51.3 ± 4.8 | 108 (48.9) | 27 (12.2) | 31 (14.0) |
| Shen et al., 2022 | China | PS | AMI | 35 | 63.3 ± 7.8 | 29 (82.9) | NS | NS | 24 (68.6) | NS | NS | 8 |
| UAP | 30 | 63.2 ± 7.4 | 19 (63.3) | NS | NS | 17 (56.7) | NS | NS |
| Control | 30 | 64.1 ± 7.8 | 12 (40.0) | NS | NS | 6 (20.0) | NS | NS |
| Shlipak et al., 2008 | USA | PS | MACE (+) | 142 | 71.0±12.0 | 121 (85.2) | NS | NS | 112 (79.4) | 57 (40.1) | NS | 7 |
| MACE (-) | 837 | 66.1±10.7 | 677 (80.9) | NS | NS | 577 (69.1) | 202 (24.2) | NS |
| Silva et al., 2012 | Portugal | PS | MACE (+) | 20 | NS | NS | NS | 41 ± 10 | NS | NS | NS | 7 |
| MACE (-) | 133 | NS | NS | NS | 53 ± 11 | NS | NS | NS |
| Sun et al., 2012 | China | PS | MACE (+) | 95 | 62.5±10.5 | 57 (60.0) | NS | 57.5± 12.1 | 43 (45.3) | 26 (27.4) | NS | 7 |
| MACE (-) | 510 | 59.9±10.6 | 347 (68.0) | NS | 61.6± 7.0 | 256 (50.2) | 118 (23.1) | NS |
| LCysC | 293 | NS | NS | NS | NS | NS | NS | NS |
| HCysC | 312 | NS | NS | NS | NS | NS | NS | NS |
| Taglieri et al., 2010 | Spain | PS | LCysC | 257 | 60.3±4.7 | 204 (79.4) | NS | 60.4± 4.2 | 141 (54.9) | 66 (25.7) | 143 (55.6) | 8 |
| HCysC | 268 | 68.4±3.2 | 186 (69.4) | NS | 59.9± 3.8 | 176 (65.7) | 94 (35.1) | 152 (56.7) |
| Tayeh et al., 2012 | Egypt | PS | STEMI | 19 | NS | NS | NS | NS | NS | NS | NS | 7 |
| NSTEMI | 12 | NS | NS | NS | NS | NS | NS | NS |
| UAP | 19 | NS | NS | NS | NS | NS | NS | NS |
| ACS | 75 | 50.3±8.1 | 39 (52) | 25.1±3.8 | NS | 34 (45.3) | 28 (37.3) | 51 (68) |
| Control | 75 | 49.09±8.1 | 40 (53.3) | 25.9±2.6 | NS | 33 (44.0) | 30 (40.0) | 26 (34.7) |
| Vaduganathan et al., 2019 | USA | RCT | MACE (+) | 621 | 63.8 ± 9.8 | 392 (63.1) | 29.7 ± 6.1 | NS | 572 (92.1) | NS | NS | 9 |
| MACE (-) | 4759 | 60.5 ± 9.9 | 3259 (68.5) | 29.4 ± 5.5 | NS | 3897 (81.9) | NS | NS |
| von Jeinsen et al., 2017 | Germany | PS | MACE (+) | 63 | 72 ± 10 | 47 (75) | NS | NS | 57 (90) | 27 (43) | 42 (67) | 8 |
| MACE (-) | 1741 | 61 ± 13 | 1150 (66) | NS | NS | 1273 (73) | 314 (18) | 1278 (73) |
| Wasyanto et al., 2023 | Indonesia | PS | MACE (+) | 10 | 59.4 ± 8.9 | 9 (90.0) | 26.2 ± 3.7 | 37.4 ± 12.2 | 3 (30.0) | 3 (30.0) | 3 (30.0) | 8 |
| MACE (-) | 30 | 54.8 ± 8.2 | 28 (93.3) | 26.2 ± 3.3 | 45.1 ± 8.5 | 18 (60.0) | 10 (33.3) | 8 (26.7) |
| Wei et al., 2013 | China | RS | MACE (+) | 70 | 61.8 ± 11.8 | 50 (71) | NS | 59.1 ± 8.1 | 31 (44) | 16 (23) | NS | 8 |
| MACE (-) | 169 | 59.2 ± 10.9 | 143 (85) | NS | 57.5 ± 7.9 | 82 (49) | 42 (25) | NS |
| Widera et al., 2013 | Germany | CCS | MACE (+) | 78 | 68.5 ± 4.0 | 810 (71) | NS | NS | NS | NS | NS | 7 |
| MACE (-) | 1068 | 74 ± 3 | 52 (67) | NS | NS | NS | NS | NS |
| Windhausen et al., 2009 | the Netherlands | RCT | LCysC | 378 | 57 ± 10 | 290 (76.7) | NS | NS | 136 (36) | 50 (13) | 133 (35) | 8 |
| HCysC | 385 | 67 ± 9 | 272 (70.6) | NS | NS | 188 (49) | 66 (17) | 149 (39) |
| Yan et al., 2017 | China | PS | AMI | 30 | 58.2 ± 9.5 | 25 (83.3) | NS | NS | NS | 5 (18.1) | NS | 8 |
| UAP | 40 | 56.3 ± 8.6 | 28 (69.1) | NS | NS | NS | 6 (15.6) | NS |
| Control | 50 | 55.1 ± 11.8 | 39 (50.0) | NS | NS | NS | 6 (12.0) | NS |
| Zhang et al., 2017 | China | RS | STEMI | 77 | 59.2 ± 11.8 | 165 (84.4) | NS | NS | 42 (54.6) | 20 (26.0) | NS | 7 |
| NSTEMI | 35 | 67.1 ± 10.8 | 29 (82.9) | NS | NS | 25 (71.4) | 14 (40.0) | NS |
| UAP | 83 | 64.1 ± 10.4 | 57 (68.7) | NS | NS | 56 (67.5) | 25 (30.1) | NS |
| Control | 39 | 64.6 ± 8.1 | 20 (51.3) | NS | NS | 23 (59.0) | 6 (15.4) | NS |
| Zhang et al., 2021 | China | RS | STEMI | 102 | 58.5 ± 12.4  | 77 (75.5) | 25.3 ± 3.7 | NS | 33 (32.4) | 21 (20.6) | NS | 8 |
| NSTEMI | 96 | 62.4 ± 11.9 | 72 (75.0) | 26.0 ± 3.5 | NS | 53 (55.2) | 29 (30.2) | NS |
| UAP | 98 | 57.7 ± 12.6 | 71 (72.5) | 25.8 ± 3.4 | NS | 55 (58.1) | 18 (18.4) | NS |

***Legend:*** *ACS — acute coronary syndrome; AMI — acute myocardial injury; CCS — case control study; HCysC — high cystatin C concentration; HTN — hypertension; DL — dyslipidaemia; DM — diabetes mellitus; LCysC — low cystatin C concentration; MACE — major cardiovascular event; NOS — Newcastle Ottawa scale; NS — not specified; NSTEMI —* *Non-ST elevation myocardial infarction; PCS — prospective cohort study; PS — prospective study; RCT — randomized controlled trial; RS — retrospective study; STEMI —* *ST elevation myocardial infarction; UAP — unstable angina pectoris*

## **Publications list included in meta-analysis**

1. Abed D, Jasim R, Al-Hindy HA, et al. Cystatin-C in patients with acute coronary syndrome: Correlation with ventricular dysfunction, and affected coronary vessels. J Contemp Med Sci. 2020; 6(1): 26–31, doi: [10.22317/jcms.02202006](http://dx.doi.org/10.22317/jcms.02202006).
2. Abid L, Charfeddine S, Kammoun S, et al. Cystatin C: A prognostic marker after myocardial infarction in patients without chronic kidney disease. J Saudi Heart Assoc. 2016; 28(3): 144–151, doi: [10.1016/j.jsha.2015.10.001](http://dx.doi.org/10.1016/j.jsha.2015.10.001), indexed in Pubmed: [27358531](https://www.ncbi.nlm.nih.gov/pubmed/27358531).
3. Akgul O, Uyarel H, Ergelen M, et al. Predictive value of elevated cystatin C in patients undergoing primary angioplasty for ST-elevation myocardial infarction. J Crit Care. 2013; 28(5): 882.e13–882.e20, doi: [10.1016/j.jcrc.2013.03.004](http://dx.doi.org/10.1016/j.jcrc.2013.03.004), indexed in Pubmed: [23683571](https://www.ncbi.nlm.nih.gov/pubmed/23683571).
4. Bai Z, Ma Yi, Shi Z, et al. Nomogram for the prediction of intrahospital mortality risk of patients with st-segment elevation myocardial infarction complicated with hyperuricemia: A multicenter retrospective study. Ther Clin Risk Manag. 2021; 17: 863–875, doi: [10.2147/TCRM.S320533](http://dx.doi.org/10.2147/TCRM.S320533), indexed in Pubmed: [34456567](https://www.ncbi.nlm.nih.gov/pubmed/34456567).
5. Budano C, Andreis A, Filippo ODe, et al. A single cystatin C determination before coronary angiography can predict short and long-term adverse events. Int J Cardiol. 2020; 300: 73–79, doi: [10.1016/j.ijcard.2019.09.069](http://dx.doi.org/10.1016/j.ijcard.2019.09.069).
6. Chen Y, Fan Y, Men M, et al. High cystatin C levels predict long-term mortality in patients with ST-segment elevation myocardial infarction undergoing late percutaneous coronary intervention: A retrospective study. Clin Cardiol. 2019; 42(5): 572–578, doi: [10.1002/clc.23179](http://dx.doi.org/10.1002/clc.23179), indexed in Pubmed: [30907012](https://www.ncbi.nlm.nih.gov/pubmed/30907012).
7. Chen Z, Zhang J, Feng J, et al. Higher serum level of Cystatin C: An additional risk factor of CAD. Medicine (Baltimore). 2021; 100(2): e24269, doi: [10.1097/MD.0000000000024269](http://dx.doi.org/10.1097/MD.0000000000024269), indexed in Pubmed: [33466214](https://www.ncbi.nlm.nih.gov/pubmed/33466214).
8. Correa S, Morrow DA, Braunwald E. Cystatin C for risk stratification in patients after an acute coronary syndrome. J Am Heart Assoc. 2018; 7(20): e009077, doi: [10.1161/JAHA.118.009077](http://dx.doi.org/10.1161/JAHA.118.009077).
9. de Hoog VC, Timmers L, Schoneveld AH, et al. Serum extracellular vesicle protein levels are associated with acute coronary syndrome. Eur Heart J Acute Cardiovasc Care. 2013; 2(1): 53–60, doi: [10.1177/2048872612471212](http://dx.doi.org/10.1177/2048872612471212).
10. Derzhko R, Plaksej R, Przewlocka-Kosmala M, et al. Prediction of left ventricular dysfunction progression in patients with a first ST-elevation myocardial infarction — contribution of cystatin C assessment. Coron Artery Dis. 2009; 20(7): 453–461, doi: [10.1097/mca.0b013e32832fe5ec](http://dx.doi.org/10.1097/mca.0b013e32832fe5ec).
11. Dong H, Xiao D, Tang Y. Serum cystatin C predicts the risk of non-ST-elevation acute coronary syndrome. J Cardiothorac Surg. 2023; 18(1): 351, doi: [10.1186/s13019-023-02465-1](http://dx.doi.org/10.1186/s13019-023-02465-1), indexed in Pubmed: [38041201](https://www.ncbi.nlm.nih.gov/pubmed/38041201).
12. Eggers KM, Kempf T, Venge P, et al. Improving long-term risk prediction in patients with acute chest pain: the Global Registry of Acute Coronary Events (GRACE) risk score is enhanced by selected nonnecrosis biomarkers. Am Heart J. 2010; 160(1): 88–94, doi: [10.1016/j.ahj.2010.05.002](http://dx.doi.org/10.1016/j.ahj.2010.05.002), indexed in Pubmed: [20598977](https://www.ncbi.nlm.nih.gov/pubmed/20598977).
13. Ferraro S, Lupi A, Marano G, et al. Different patterns of NT-proBNP secretion in acute coronary syndromes. Clin Chim Acta. 2009; 402(1–2): 176–181, doi: [10.1016/j.cca.2009.01.005](http://dx.doi.org/10.1016/j.cca.2009.01.005), indexed in Pubmed: [19263527](https://www.ncbi.nlm.nih.gov/pubmed/19263527).
14. Flores-Blanco PJ, López-Cuenca Á, Januzzi JL, et al. Comparison of risk prediction with the CKD-EPI and MDRD equations in non-ST-segment elevation acute coronary syndrome. Clin Cardiol. 2016; 39(9): 507–515, doi: [10.1002/clc.22556](http://dx.doi.org/10.1002/clc.22556), indexed in Pubmed: [27249221](https://www.ncbi.nlm.nih.gov/pubmed/27249221).
15. Fu Z, Yang X, Shen M, et al. Prognostic ability of cystatin C and homocysteine plasma levels for long-term outcomes in very old acute myocardial infarction patients. Clin Interv Aging. 2018; Volume 13: 1201–1209, doi: [10.2147/cia.s151211](http://dx.doi.org/10.2147/cia.s151211).
16. García Acuña JM, González-Babarro E, Grigorian Shamagian L, et al. Cystatin C provides more information than other renal function parameters for stratifying risk in patients with acute coronary syndrome. Rev Esp Cardiol. 2009; 62(5): 510–519, doi: [10.1016/s1885-5857(09)71833-x](http://dx.doi.org/10.1016/s1885-5857%2809%2971833-x), indexed in Pubmed: [19406065](https://www.ncbi.nlm.nih.gov/pubmed/19406065).
17. Ge C, Ren F, Lu S, et al. Clinical prognostic significance of plasma cystatin C levels among patients with acute coronary syndrome. Clin Cardiol. 2009; 32(11): 644–648, doi: [10.1002/clc.20672](http://dx.doi.org/10.1002/clc.20672).
18. Grufman H, Yndigegn T, Gonçalves I, et al. Elevated IL-27 in patients with acute coronary syndrome is associated with adverse ventricular remodeling and increased risk of recurrent myocardial infarction and cardiovascular death. Cytokine. 2019; 122: 154208, doi: [10.1016/j.cyto.2017.11.002](http://dx.doi.org/10.1016/j.cyto.2017.11.002), indexed in Pubmed: [29428559](https://www.ncbi.nlm.nih.gov/pubmed/29428559).
19. Huang Q, Shen W, Li J, et al. Association of serum cystatin C levels with acute coronary syndrome in patients of advanced age. J Int Med Res. 2019; 47(5): 1987–1997, doi: [10.1177/0300060519833576](http://dx.doi.org/10.1177/0300060519833576), indexed in Pubmed: [30871390](https://www.ncbi.nlm.nih.gov/pubmed/30871390).
20. Ichimoto E, Jo K, Kobayashi Y, et al. Prognostic significance of cystatin C in patients with ST-elevation myocardial infarction. Circ J. 2009; 73(9): 1669–1673, doi: [10.1253/circj.cj-08-0943](http://dx.doi.org/10.1253/circj.cj-08-0943), indexed in Pubmed: [19597298](https://www.ncbi.nlm.nih.gov/pubmed/19597298).
21. Ix JH, Shlipak MG, Chertow GM, et al. Association of cystatin C with mortality, cardiovascular events, and incident heart failure among persons with coronary heart disease: Data from the Heart and Soul Study. Circulation. 2007; 115(2): 173–179, doi: [10.1161/CIRCULATIONAHA.106.644286](http://dx.doi.org/10.1161/CIRCULATIONAHA.106.644286), indexed in Pubmed: [17190862](https://www.ncbi.nlm.nih.gov/pubmed/17190862).
22. Jernberg TF, Lindahl BO, James SH, et al. Cystatin C: a novel predictor of outcome in suspected or confirmed non-ST-elevation acute coronary syndrome. Circulation. 2004; 110(16): 2342–2348, doi: [10.1161/01.CIR.0000145166.44942.E0](http://dx.doi.org/10.1161/01.CIR.0000145166.44942.E0), indexed in Pubmed: [15477399](https://www.ncbi.nlm.nih.gov/pubmed/15477399).
23. Kallel C, Cohen W, Saut N, et al. Association of soluble endothelial protein C receptor plasma levels and PROCR rs867186 with cardiovascular risk factors and cardiovascular events in coronary artery disease patients: the Athero Gene study. BMC Med Genet. 2012; 13: 103, doi: [10.1186/1471-2350-13-103](http://dx.doi.org/10.1186/1471-2350-13-103), indexed in Pubmed: [23136988](https://www.ncbi.nlm.nih.gov/pubmed/23136988).
24. Kaski JC, Fernández-Bergés DJ, Consuegra-Sánchez L, et al. A comparative study of biomarkers for risk prediction in acute coronary syndrome-Results of the SIESTA (systemic inflammation evaluation in non-ST-elevation acute coronary syndrome) study. Atherosclerosis. 2010; 212(2): 636–643, doi: [10.1016/j.atherosclerosis.2010.06.026](http://dx.doi.org/10.1016/j.atherosclerosis.2010.06.026), indexed in Pubmed: [20619836](https://www.ncbi.nlm.nih.gov/pubmed/20619836).
25. Keller T, Messow CM, Lubos E, et al. Cystatin C and cardiovascular mortality in patients with coronary artery disease and normal or mildly reduced kidney function: results from the AtheroGene study. Eur Heart J. 2009; 30(3): 314–320, doi: [10.1093/eurheartj/ehn598](http://dx.doi.org/10.1093/eurheartj/ehn598), indexed in Pubmed: [19153178](https://www.ncbi.nlm.nih.gov/pubmed/19153178).
26. Kilic T, Oner G, Ural E, et al. Comparison of the long-term prognostic value of cystatin C to other indicators of renal function, markers of inflammation and systolic dysfunction among patients with acute coronary syndrome. Atherosclerosis. 2009; 207(2): 552–558, doi: [10.1016/j.atherosclerosis.2009.05.015](http://dx.doi.org/10.1016/j.atherosclerosis.2009.05.015), indexed in Pubmed: [19523634](https://www.ncbi.nlm.nih.gov/pubmed/19523634).
27. Le QF, Liu J, Chen L. The value of serum lipoprotein-associated phospholipase A2, ischemia-modified albumin, and cystatin C in predicting coronary heart disease risk: A single center retrospective cohort study. Eur Rev Med Pharmacol Sci. 2023; 27(21): 10730–10735, doi: [10.26355/eurrev\_202311\_34353](http://dx.doi.org/10.26355/eurrev_202311_34353), indexed in Pubmed: [37975398](https://www.ncbi.nlm.nih.gov/pubmed/37975398).
28. Lodh M, Parida A, Sanyal J, et al. Cystatin C in acute coronary syndrome. EJIFCC. 2013; 24(2): 61–67, indexed in Pubmed: [27683440](https://www.ncbi.nlm.nih.gov/pubmed/27683440).
29. Lou B, Luo Y, Zhang H, et al. Association between cystatin C and cardiac function in acute myocardial infarction patients: A real-world analysis. Dis Markers. 2022; 2022: 7267937, doi: [10.1155/2022/7267937](http://dx.doi.org/10.1155/2022/7267937), indexed in Pubmed: [35502303](https://www.ncbi.nlm.nih.gov/pubmed/35502303).
30. López-Cuenca Á, Manzano-Fernández S, Marín F, et al. Beta-trace protein and cystatin c as predictors of major bleeding in non-ST-segment elevation acute coronary syndrome. Circ J. 2013; 77(8): 2088–2096, doi: [10.1253/circj.cj-13-0106](http://dx.doi.org/10.1253/circj.cj-13-0106), indexed in Pubmed: [23698027](https://www.ncbi.nlm.nih.gov/pubmed/23698027).
31. Ma Li, Dai W, Lin Y, et al. Leukocyte Rho kinase activity and serum cystatin C affect cardiovascular events in acute coronary syndrome. Medicine (Baltimore). 2020; 99(28): e20060, doi: [10.1097/MD.0000000000020060](http://dx.doi.org/10.1097/MD.0000000000020060), indexed in Pubmed: [32664054](https://www.ncbi.nlm.nih.gov/pubmed/32664054).
32. Mao Qi, Zhao N, Wang Y, et al. Association of cystatin C with metabolic syndrome and its prognostic performance in non-st-segment elevation acute coronary syndrome with preserved renal function. Biomed Res Int. 2019; 2019: 8541402, doi: [10.1155/2019/8541402](http://dx.doi.org/10.1155/2019/8541402), indexed in Pubmed: [31317040](https://www.ncbi.nlm.nih.gov/pubmed/31317040).
33. Noto D, Cefalu' AB, Barbagallo CM, et al. Cystatin C levels are decreased in acute myocardial infarction: Effect of cystatin C G73A gene polymorphism on plasma levels. Int J Cardiol. 2005; 101(2): 213–217, doi: [10.1016/j.ijcard.2004.03.018](http://dx.doi.org/10.1016/j.ijcard.2004.03.018), indexed in Pubmed: [15882666](https://www.ncbi.nlm.nih.gov/pubmed/15882666).
34. Obeid S, Yousif N, Davies A, et al. Prognostic role of plasma galectin-3 levels in acute coronary syndrome. Eur Heart J Acute Cardiovasc Care. 2020; 9(8): 869–878, doi: [10.1177/2048872620974612](http://dx.doi.org/10.1177/2048872620974612), indexed in Pubmed: [33300826](https://www.ncbi.nlm.nih.gov/pubmed/33300826).
35. Pan J, Sun X, Zhang P, et al. Relationship between serum cystatin-C and coronary lesion severity in coronary artery disease patients with a normal glomerular filtration rate. J Int Med Res. 2021; 49(1): 300060520985639, doi: [10.1177/0300060520985639](http://dx.doi.org/10.1177/0300060520985639), indexed in Pubmed: [33435768](https://www.ncbi.nlm.nih.gov/pubmed/33435768).
36. Přeček J, Hutyra M, Sněhota M, et al. Prognostic value of cystatin C in relation to other markers of renal function in early prediction of hospital mortality and major cardiac adverse events in patients with ST elevation myocardial infarction treated by primary percutaneous coronary intervention. Cor et Vasa. 2018; 60(4): e352–e360, doi: [10.1016/j.crvasa.2017.11.005](http://dx.doi.org/10.1016/j.crvasa.2017.11.005).
37. Rathnayake N, Buhlin K, Kjellström B, et al. Saliva and plasma levels of cardiac‐related biomarkers in post‐myocardial infarction patients. J Clin Periodontol. 2017; 44(7): 692–699, doi: [10.1111/jcpe.12740](http://dx.doi.org/10.1111/jcpe.12740).
38. Ristiniemi N, Lund J, Tertti R, et al. Cystatin C as a predictor of all-cause mortality and myocardial infarction in patients with non-ST-elevation acute coronary syndrome. Clinical Biochemistry. 2012; 45(7–8): 535–540, doi: [10.1016/j.clinbiochem.2012.02.012](http://dx.doi.org/10.1016/j.clinbiochem.2012.02.012).
39. Sai E, Shimada K, Miyauchi K, et al. Increased cystatin C levels as a risk factor of cardiovascular events in patients with preserved estimated glomerular filtration rate after elective percutaneous coronary intervention with drug-eluting stents. Heart Vessels. 2016; 31(5): 694–701, doi: [10.1007/s00380-015-0674-0](http://dx.doi.org/10.1007/s00380-015-0674-0), indexed in Pubmed: [25863806](https://www.ncbi.nlm.nih.gov/pubmed/25863806).
40. Saito T, Arashi H, Yamaguchi J, et al. Elevated cystatin-C levels are associated with increased mortality in acute coronary syndrome patients: an HIJ-PROPER sub-analysis. Cardiorenal Med. 2022; 12(1): 20–28, doi: [10.1159/000522412](http://dx.doi.org/10.1159/000522412), indexed in Pubmed: [35139516](https://www.ncbi.nlm.nih.gov/pubmed/35139516).
41. Shaker AK, Al-Saad R, Jasim R, et al. Biochemical significance of cystatin-C and high- sensitive CRP in patients with acute coronary syndrome; any clinical correlation with diagnosis and ejection fraction. Sys Rev Pharm. 2020; 11(3): 301–308, doi: [10.5530/srp.2020.3.35](http://dx.doi.org/10.5530/srp.2020.3.35).
42. Shalia K, Mashru M, Shah V, et al. Levels of cathepsins in acute myocardial infarction. Indian Heart J. 2012; 64(3): 290–294, doi: [10.1016/s0019-4832(12)60089-3](http://dx.doi.org/10.1016/s0019-4832%2812%2960089-3), indexed in Pubmed: [22664813](https://www.ncbi.nlm.nih.gov/pubmed/22664813).
43. Shantsila E, Tapp LD, Lip GYH. Free Light Chains in patients with acute coronary syndromes: Relationships to inflammation and renal function. Int J Cardiol. 2015; 185: 322–327, doi: [10.1016/j.ijcard.2015.03.105](http://dx.doi.org/10.1016/j.ijcard.2015.03.105), indexed in Pubmed: [25828674](https://www.ncbi.nlm.nih.gov/pubmed/25828674).
44. Shen G, Zhu H, Ding H, et al. Increased cystatin c level in ST-elevation myocardial infarction predisposes the prognosis of angioplasty. Am J Med Sci. 2018; 355(6): 530–536, doi: [10.1016/j.amjms.2018.03.003](http://dx.doi.org/10.1016/j.amjms.2018.03.003), indexed in Pubmed: [29891036](https://www.ncbi.nlm.nih.gov/pubmed/29891036).
45. Shen C, Wang J, Tu S. Effects of serum LDL-C, cysc, and D-D in patients with coronary atherosclerotic heart disease. Comput Intell Neurosci. 2022; 2022: 5771960, doi: [10.1155/2022/5771960](http://dx.doi.org/10.1155/2022/5771960), indexed in Pubmed: [35800677](https://www.ncbi.nlm.nih.gov/pubmed/35800677).
46. Shlipak MG, Ix JH, Bibbins-Domingo K, et al. Biomarkers to predict recurrent cardiovascular disease: The heart and soul study. Am J Med. 2008; 121(1): 50–57, doi: [10.1016/j.amjmed.2007.06.030](http://dx.doi.org/10.1016/j.amjmed.2007.06.030), indexed in Pubmed: [18187073](https://www.ncbi.nlm.nih.gov/pubmed/18187073).
47. Silva D, Cortez-Dias N, Jorge C, et al. Cystatin C as prognostic biomarker in ST-segment elevation acute myocardial infarction. Am J Cardiol. 2012; 109(10): 1431–1438, doi: [10.1016/j.amjcard.2012.01.356](http://dx.doi.org/10.1016/j.amjcard.2012.01.356), indexed in Pubmed: [22356795](https://www.ncbi.nlm.nih.gov/pubmed/22356795).
48. Sun TW, Xu QY, Yao HM, et al. The predictive value of plasma cystatin C for acute coronary syndrome treated with percutaneous coronary intervention. Heart Lung. 2012; 41(5): 456–462, doi: [10.1016/j.hrtlng.2012.04.007](http://dx.doi.org/10.1016/j.hrtlng.2012.04.007), indexed in Pubmed: [22652172](https://www.ncbi.nlm.nih.gov/pubmed/22652172).
49. Taglieri N, Fernandez-Berges DJ, Koenig W, et al. Plasma cystatin C for prediction of 1-year cardiac events in mediterranean patients with non-ST elevation acute coronary syndrome. Atherosclerosis. 2010; 209(1): 300–305, doi: [10.1016/j.atherosclerosis.2009.09.022](http://dx.doi.org/10.1016/j.atherosclerosis.2009.09.022), indexed in Pubmed: [19819453](https://www.ncbi.nlm.nih.gov/pubmed/19819453).
50. Tayeh O, Rizk A, Mowafy A, et al. Cystatin-C as a predictor for major adverse cardiac events in patients with acute coronary syndrome. Egypt Heart J. 2012; 64(3): 87–95, doi: [10.1016/j.ehj.2012.03.002](http://dx.doi.org/10.1016/j.ehj.2012.03.002).
51. Vaduganathan M, White W, Charytan D, et al. Relation of serum and urine renal biomarkers to cardiovascular risk in patients with type 2 diabetes mellitus and recent acute coronary syndromes (from the EXAMINE trial). Am J Cardiol. 2019; 123(3): 382–391, doi: [10.1016/j.amjcard.2018.10.035](http://dx.doi.org/10.1016/j.amjcard.2018.10.035).
52. von Jeinsen B, Kraus D, Palapies L, et al. Urinary neutrophil gelatinase-associated lipocalin and cystatin C compared to the estimated glomerular filtration rate to predict risk in patients with suspected acute myocardial infarction. Int J Cardiol. 2017; 245: 6–12, doi: [10.1016/j.ijcard.2017.07.086](http://dx.doi.org/10.1016/j.ijcard.2017.07.086), indexed in Pubmed: [28778467](https://www.ncbi.nlm.nih.gov/pubmed/28778467).
53. Wasyanto T, Yasa A, Yudhistira Y. Cystatin C as a predictor of major adverse cardiovascular event in patients with acute myocardial infarction without cardiogenic shock and renal impairment after coronary intervention. Int J Gen Med. 2023; 16: 2219–2227, doi: [10.2147/IJGM.S415595](http://dx.doi.org/10.2147/IJGM.S415595), indexed in Pubmed: [37293518](https://www.ncbi.nlm.nih.gov/pubmed/37293518).
54. Wei S, Mao L, Liu B, et al. Serum biomarkers and the prognosis of AMI patients. Herz. 2013; 39(3): 384–389, doi: [10.1007/s00059-013-3828-9](http://dx.doi.org/10.1007/s00059-013-3828-9), indexed in Pubmed: [23649322](https://www.ncbi.nlm.nih.gov/pubmed/23649322).
55. Widera C, Pencina MJ, Bobadilla M, et al. Incremental prognostic value of biomarkers beyond the GRACE (Global Registry of Acute Coronary Events) score and high-sensitivity cardiac troponin T in non-ST-elevation acute coronary syndrome. Clin Chem. 2013; 59(10): 1497–1505, doi: [10.1373/clinchem.2013.206185](http://dx.doi.org/10.1373/clinchem.2013.206185), indexed in Pubmed: [23818444](https://www.ncbi.nlm.nih.gov/pubmed/23818444).
56. Windhausen F, Hirsch A, Fischer J, et al. Cystatin C for enhancement of risk stratification in non-ST elevation acute coronary syndrome patients with an increased troponin T. Clin Chem. 2009; 55(6): 1118–1125, doi: [10.1373/clinchem.2008.119669](http://dx.doi.org/10.1373/clinchem.2008.119669), indexed in Pubmed: [19359536](https://www.ncbi.nlm.nih.gov/pubmed/19359536).
57. Yan L, Ding S, Gu B, et al. Clinical application of simultaneous detection of cystatin C, cathepsin S, and IL-1 in classification of coronary artery disease. J Biomed Res. 2017; 31(4): 315–320, doi: [10.7555/JBR.31.20150152](http://dx.doi.org/10.7555/JBR.31.20150152), indexed in Pubmed: [28808203](https://www.ncbi.nlm.nih.gov/pubmed/28808203).
58. Zhang J, Wu X, Gao P, et al. Correlations of serum cystatin C and glomerular filtration rate with vascular lesions and severity in acute coronary syndrome. BMC Cardiovasc Disord. 2017; 17(1): 47, doi: [10.1186/s12872-017-0483-8](http://dx.doi.org/10.1186/s12872-017-0483-8), indexed in Pubmed: [28143410](https://www.ncbi.nlm.nih.gov/pubmed/28143410).
59. Zhang L, Hailati J, Ma X, et al. Analysis of risk factors for different subtypes of acute coronary syndrome. J Int Med Res. 2021; 49(5), doi: [10.1177/03000605211008326](http://dx.doi.org/10.1177/03000605211008326), indexed in Pubmed: [33969735](https://www.ncbi.nlm.nih.gov/pubmed/33969735).



## **Supplementary Figure 1.** Forest pot demonstrating cystatin C concentrations among AMI and Control groups.



## **Supplementary Figure 2.** Forest pot demonstrating cystatin C concentrations among STEMI and Control groups.



## **Supplementary Figure 3.** Forest pot demonstrating cystatin C concentrations among NSTEMI and Control groups.



## **Supplementary Figure 4.** Forest pot demonstrating cystatin C concentrations among STEMI and NSTEMI groups.