Online Supplement: Prognostic Value of a Novel and an Established High-Sensitivity Troponin I Assay in Patients presenting with Suspected Myocardial Infarction

Nils A. Sörensen [1,2,*,†]**, Sebastian Ludwig** [1,2,*,†]**, Nataliya Makarova** [1,2]**, Johannes T. Neumann** [1,2]**, Jonas Lehmacher** [1]**, Tau S. Hartikainen** [1]**, Paul M. Haller** [1,2]**, Till Keller** [3,4]**, Stefan Blankenberg** [1,2]**, Dirk Westermann** [1,2]**, Tanja Zeller** [1,2,‡] **and Niklas Schofer** [1,‡]

[1] Department of General and Interventional Cardiology, University Heart Center, Martinistrasse 52, 20246 Hamburg, Germany

[2] German Center for Cardiovascular Research (DZHK), Partner Site Hamburg/Kiel/Lübeck, Martinistrasse 52, 20246 Hamburg, Germany

[3] Kerckhoff Heart and Thorax Center, Department of Cardiology, Benekestrasse 2–8, 61231 Bad Nauheim, Germany

[4] German Center for Cardiovascular Research (DZHK), Partner Site RheinMain, Benekestrasse 2–8, 61231 Bad Nauheim, Germany

[*] Correspondence: n.soerensen@uke.de (N.A.S.); se.ludwig@uke.de (S.L.); Tel.: +49-40-7410-59658 (N.A.S.); Fax: +49-40-7410-56599 (N.A.S.)

[†] Both authors contributed equally as first authors.

[‡] Both authors contributed equally as last authors.

Comparison between high-sensitivity troponin I assays

Both assays (Method A: Abbott, Method B: Singulex) were compared using Passing-Bablok (**Figure S3A–C**) and Bland-Altman (**Figure S4A–C**) regression. Regression analysis was performed for the overall patient cohort (**Figures S3 and S4A**) as well as for the subgroups of AMI patients (**Figures S3 and S4B**) and non-AMI patients (**Figures S3 and S4C**). Bias between both methods was 0.7844 (standard deviation (SE): 0.5710) for the overall patient cohort, 0.7325 (SE: 0.5710) for the subgroup of AMI patients and 0.7993 (SE: 0.5710) for the subgroup of non-AMI patients.

Table 1. Patient characteristics according to thirds of troponin levels analyzed by both assays.

	1st Third Singulex (N = 780)	1st Third Abbott (N = 780)	2nd Third Singulex (N = 775)	2nd Third Abbott (N = 776)	3rd Third Singulex (N = 777)	3rd Third Abbott (N = 776)
Age (years)	53.0 (43.0, 63.6)	54.0 (44.4, 66.0)	69.0 (59.0, 76.0)	68.0 (55.0, 76.0)	69.0 (57.0, 76.0)	69.0 (57.0, 77.0)
Sex (male) No. (%)	435 (55.8)	436 (55.9)	518 (66.8)	520 (67.0)	555 (71.4)	552 (71.1)
Current smoker No. (%)	228 (29.4)	214 (27.5)	136 (17.6)	159 (20.6)	203 (26.4)	194 (25.2)
Diabetes No. (%)	62 (8.1)	61 (7.9)	126 (16.4)	127 (16.6)	146 (19.0)	146 (19.0)
BMI (kg/m²)	25.8 (23.3, 28.9)	25.9 (23.2, 29.0)	27.0 (24.4, 30.7)	26.9 (24.5, 30.2)	26.8 (24.2, 30.1)	26.8 (24.2, 30.4)
HTN No. (%)	372 (47.8)	406 (52.1)	627 (81.2)	595 (77.0)	611 (78.7)	609 (78.6)
HLP No. (%)	273 (35.0)	289 (37.1)	401 (51.7)	394 (50.8)	455 (58.6)	446 (57.5)
History of AMI No. (%)	46 (5.9)	53 (6.8)	164 (21.2)	156 (20.2)	202 (26.1)	203 (26.3)
History of CAD No. (%)	121 (15.6)	136 (17.6)	324 (42.0)	314 (40.7)	346 (44.5)	341 (43.9)
Family history of CAD No. (%)	205 (26.9)	205 (26.9)	159 (21.3)	162 (21.5)	157 (20.9)	154 (20.6)
AF No. (%)	58 (7.5)	69 (8.9)	158 (20.5)	144 (18.7)	166 (21.5)	169 (21.9)
HF No. (%)	17 (2.2)	14 (1.8)	72 (9.3)	80 (10.4)	128 (16.6)	123 (16.0)
eGFR (mL/min for 1.73m²)	87.9 (75.6, 100.1)	86.9 (74.1, 99.0)	73.4 (59.5, 86.7)	74.9 (60.5, 87.7)	69.4 (52.0, 85.8)	69.3 (52.3, 86.0)
GRACE > 140 No. (%)	6 (0.8)	4 (0.5)	80 (10.6)	82 (10.8)	159 (21.4)	159 (21.5)
Troponin I (ng/L)	0.7 (0.5, 1.0)*	2.3 (1.8, 3.2)+	2.3 (1.8, 3.4)*	6.8 (5.3, 9.7)+	32.8 (10.4, 282.4)*	81.8 (25.4, 552.9)+
Final Diagnosis of AMI	6 (0.8)	11 (1.4)	59 (7.6)	61 (7.9)	453 (58.3)	446 (57.5)

Baseline characteristics of patients divided by thirds of troponin levels according to both assays are presented as absolute and relative frequencies for categorical variables and quartiles for continuous variables. * indicates levels analyzed by Singulex, + indicates levels analyzed by Abbott. AMI stands for acute myocardial infarction. eGFR stands for estimated Glomerular Filtration Rate. GRACE stands for Global Registry of Acute Coronary Events.

Table 2. Patient characteristics of patients with the final diagnosis of AMI according to thirds of troponin levels analyzed by both assays.
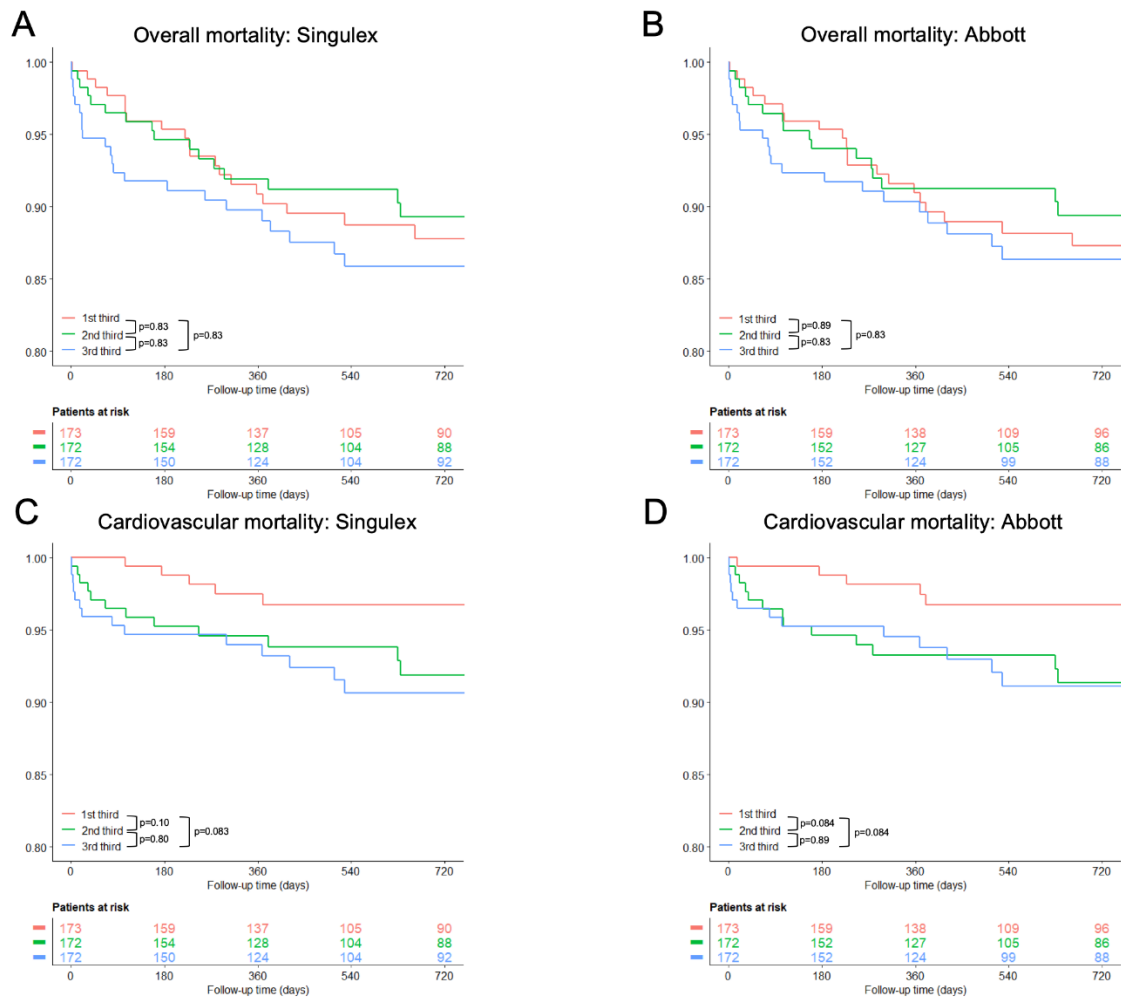
	1st Third Singulex (N = 780)	1st Third Abbott (N = 780)	2nd Third Singulex (N = 775)	2nd Third Abbott (N = 776)	3rd Third Singulex (N = 777)	3rd Third Abbott (N = 776)
Age (years)	68.0 (58.0, 75.3)	68.0 (58.0, 75.3)	67.5 (58.0, 75.6)	68.0 (58.0, 75.0)	68.0 (56.7, 75.0)	68.0 (57.0, 75.3)
Sex (male) No. (%)	118 (68.2)	119 (68.8)	124 (72.1)	123 (71.5)	126 (72.8)	126 (72.8)
Current smoker No. (%)	49 (28.3)	50 (28.9)	48 (28.2)	50 (29.2)	64 (37.0)	61 (35.5)
Diabetes No. (%)	32 (18.7)	33 (19.3)	40 (23.5)	41 (24.1)	23 (13.4)	21 (12.2)
BMI (kg/m²)	26.8 (23.6, 29.8)	26.9 (23.5, 29.9)	27.5 (24.5, 30.1)	27.3 (24.7, 30.2)	26.2 (24.0, 29.0)	26.1 (23.9, 28.9)
HTN No. (%)	137 (79.7)	135 (78.5)	135 (78.5)	136 (79.1)	125 (72.3)	126 (72.8)
HLP No. (%)	82 (47.4)	82 (47.4)	103 (59.9)	107 (62.2)	102 (59.0)	98 (56.6)
History of AMI No. (%)	37 (21.4)	35 (20.2)	41 (23.8)	44 (25.7)	34 (19.9)	33 (19.2)
History of CAD No. (%)	68 (39.3)	66 (38.2)	71 (41.3)	75 (43.6)	61 (35.3)	59 (34.1)
Family history of CAD No. (%)	31 (18.5)	32 (19.0)	40 (24.0)	39 (23.5)	39 (23.8)	39 (23.6)
AF No. (%)	37 (21.5)	35 (20.3)	26 (15.3)	28 (16.5)	18 (10.4)	18 (10.4)
HF No. (%)	24 (13.9)	21 (12.1)	19 (11.1)	19 (11.2)	21 (12.3)	24 (14.0)
eGFR (mL/min for 1.73m²)	69.2 (55.3, 83.3)	70.0 (56.9, 83.6)	69.5 (53.9, 84.4)	67.5 (51.5, 83.7)	72.0 (56.0, 89.4)	72.8 (55.0, 89.3)
GRACE > 140 No. (%)	39 (23.4)	36 (21.7)	31 (18.6)	31 (18.5)	26 (16.0)	29 (17.8)
Troponin I (ng/L)	8.0 (3.6, 13.9) *	16.9 (8.8, 26.8) +	88.3 (48.2, 175.2) *	182.8 (103.2, 329.0) +	1401.5 (612.6, 4041.3) *	3207.4 (1381.9, 10392.6) +

Baseline characteristics of patients with a final diagnosis of AMI divided by thirds of troponin levels according to both assays are presented as absolute and relative frequencies for categorical variables and quartiles for continuous variables. * indicates levels analyzed by Singulex, + indicates levels analyzed by Abbott. AMI stands for acute myocardial infarction. eGFR stands for estimated Glomerular Filtration Rate. GRACE stands for Global Registry of Acute Coronary Events.
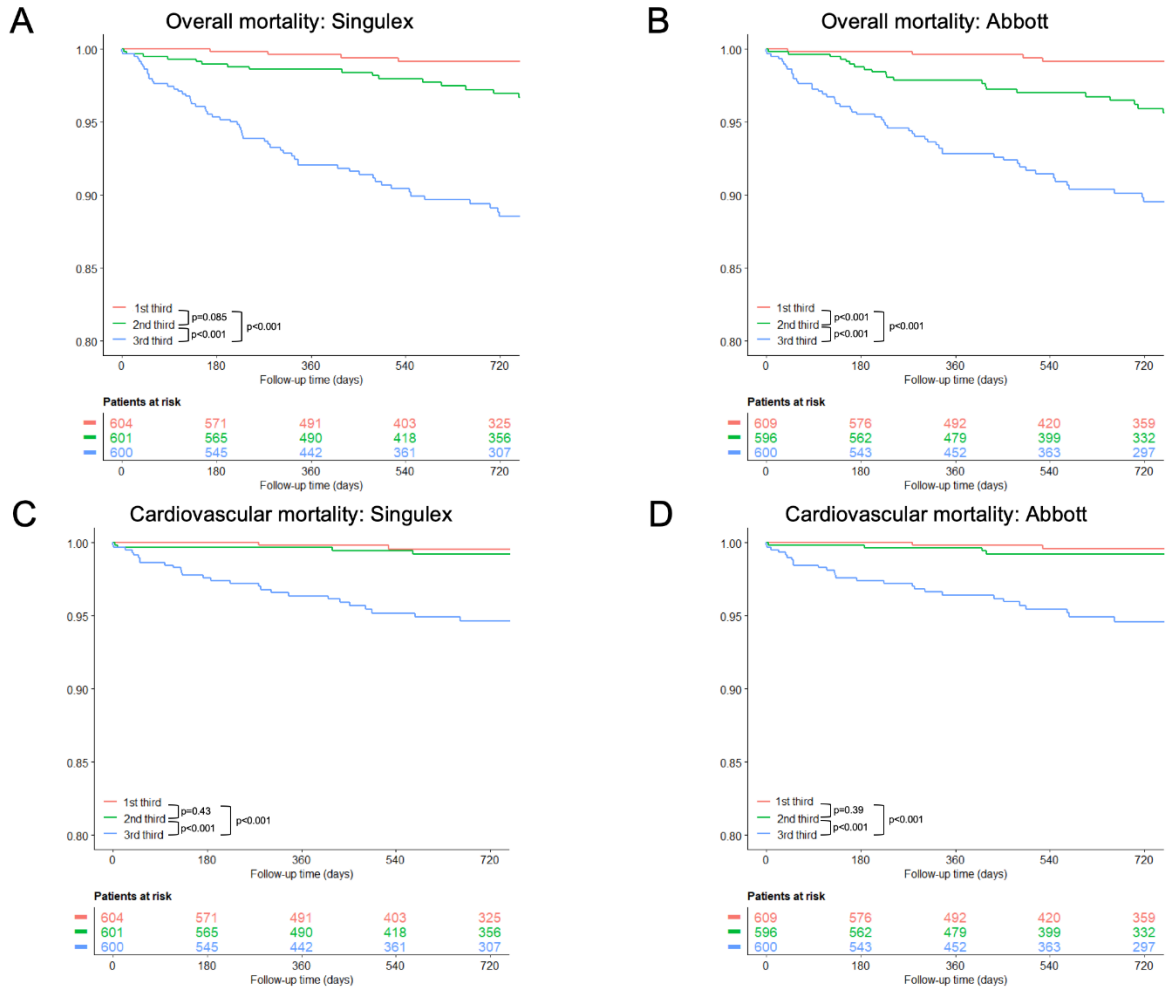
Table 3. Patient characteristics of patients with the final diagnosis of non-AMI according to thirds of troponin levels analyzed by both assays.

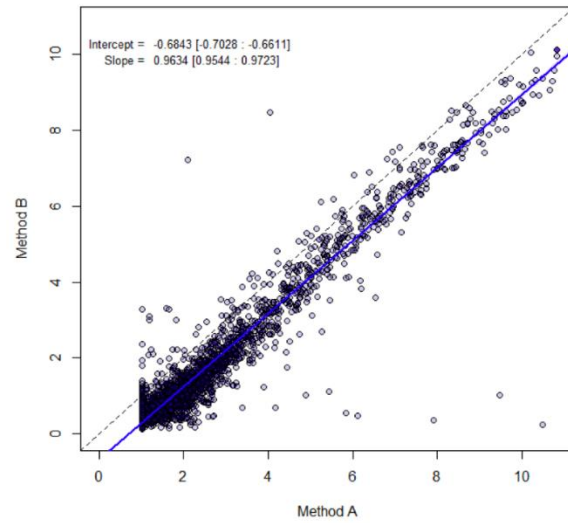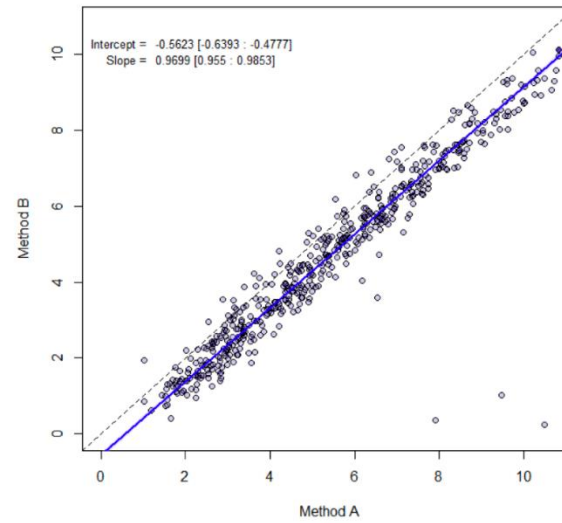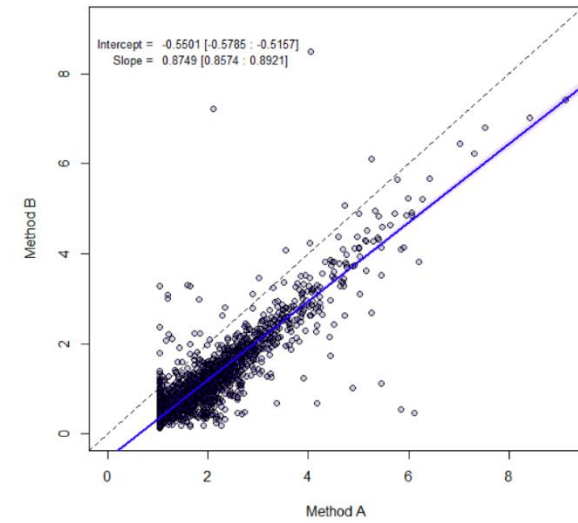|	1st Third Singulex (N = 780)	1st Third Abbott (N = 780)	2nd Third Singulex (N = 775)	2nd Third Abbott (N = 776)	3rd Third Singulex (N = 777)	3rd Third Abbott (N = 776)
Age (years)	50.0 (42.0, 60.0)	53.0 (43.0, 63.8)	66.0 (55.0, 74.0)	66.0 (52.0, 74.0)	70.0 (59.0, 77.0)	70.0 (58.0, 77.6)
Sex (male) No. (%)	323 (53.2)	324 (53.0)	394 (65.3)	394 (65.8)	423 (70.0)	422 (69.9)
Current smoker No. (%)	189 (31.2)	175 (28.7)	113 (18.9)	115 (19.4)	104 (17.4)	116 (19.4)
Diabetes No. (%)	40 (6.7)	45 (7.5)	79 (13.2)	82 (13.8)	120 (20.2)	112 (18.8)
BMI (kg/m²)	25.4 (22.9, 28.7)	25.7 (23.1, 28.8)	27.1 (24.6, 30.4)	26.8 (24.4, 30.1)	26.8 (24.5, 30.7)	26.8 (24.5, 30.7)
HTN No. (%)	262 (43.2)	302 (49.5)	449 (74.8)	418 (70.1)	502 (83.1)	493 (81.6)
HLP No. (%)	194 (32.0)	212 (34.7)	294 (48.8)	291 (48.6)	354 (58.6)	339 (56.1)
History of AMI No. (%)	25 (4.1)	31 (5.1)	94 (15.7)	97 (16.3)	181 (30.1)	172 (28.5)
History of CAD No. (%)	73 (12.1)	96 (15.8)	200 (33.4)	198 (33.3)	318 (52.7)	297 (49.3)
Family history of CAD No. (%)	167 (28.0)	162 (27.2)	134 (23.0)	137 (23.5)	110 (18.9)	112 (19.2)
AF No. (%)	34 (5.6)	51 (8.4)	92 (15.3)	87 (14.7)	175 (29.2)	163 (27.1)
HF No. (%)	11 (1.8)	12 (2.0)	33 (5.5)	31 (5.2)	109 (18.2)	110 (18.3)
eGFR (mL/min for 1.73m²)	89.8 (77.8, 102.0)	88.0 (75.7, 100.3)	78.2 (64.1, 89.2)	78.5 (64.9, 90.8)	68.3 (50.8, 84.4)	70.1 (51.8, 86.2)
GRACE > 140 No. (%)	1 (0.2)	3 (0.5)	29 (4.9)	30 (5.2)	119 (20.6)	116 (20.0)
Troponin I (ng/L)	0.6 (0.5, 0.8)*	1.9 (1.8, 2.6)[+]	1.6 (1.3, 2.1)*	5.0 (4.1, 6.1)[+]	5.8 (3.8, 11.8)*	15.2 (10.6, 32.8)+

Baseline characteristics of patients with a final diagnosis of non-AMI divided by thirds of troponin levels according to both assays are presented as absolute and relative frequencies for categorical variables and quartiles for continuous variables. * indicates levels analyzed by Singulex, [+] indicates levels analyzed by Abbott. AMI stands for acute myocardial infarction. eGFR stands for estimated Glomerular Filtration Rate. GRACE stands for Global Registry of Acute Coronary Events.
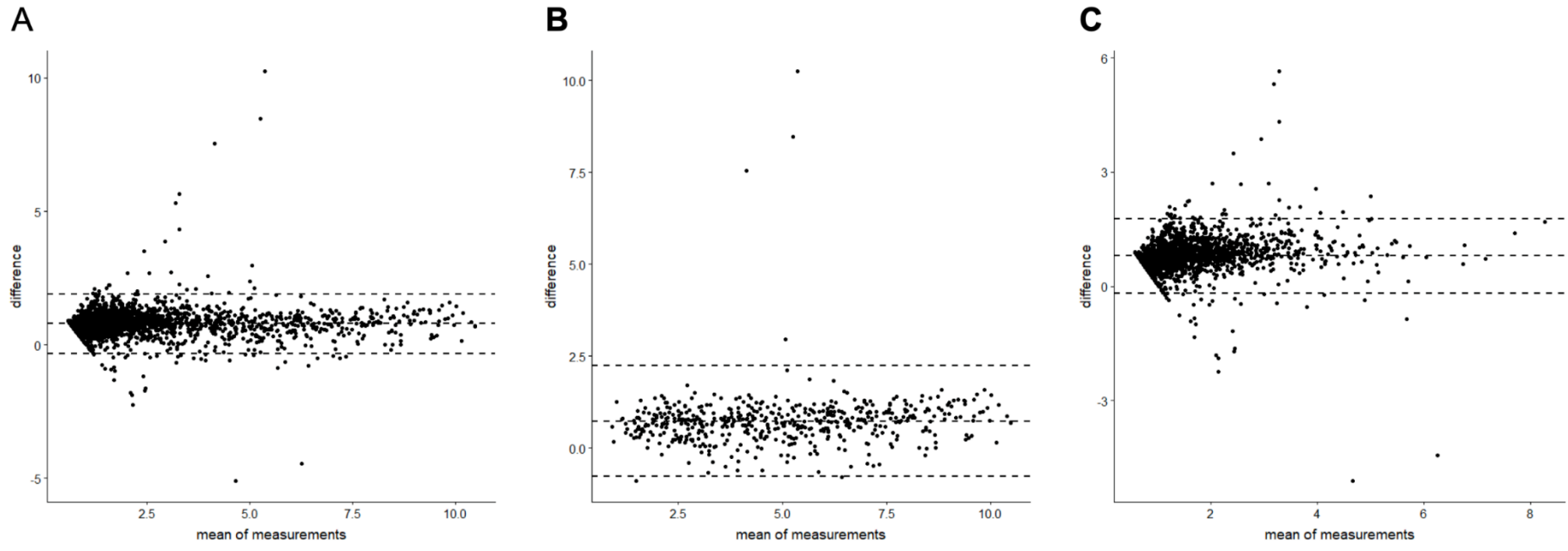
Figure 1. Survival analysis according to thirds of troponin levels in patients with AMI. Kaplan–Meier curves according thirds for the endpoints overall (A+B) and cardiovascular mortality (C+D) in patients with adjudicated diagnosis of AMI. P stands for p-value of the log-rank test.

Figure 2. Survival analysis according to thirds of troponin levels in patients without AMI. Kaplan–Meier curves according thirds for the endpoints overall (A+B) and cardiovascular mortality (C+D) in patients with adjudicated diagnosis of non-AMI. P stands for p-value of the log-rank test.

Figure 3. Correlation of both hs-TnI assays.

Figure 4. Bland-Altman analysis for comparison of both hs-TnI assays.