

## Supplementary Material

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<b>Requested Information</b>	<b>Responses</b>
<b>Was an Audit conducted on the results of the last monitoring?</b>	Yes No
<b>Which of the following actions were implemented in preparing and conducting the Audit?</b>	Identification of all stakeholders to be involved Convening the Audit meeting Discussion of the results of the monitoring indicators Presentation and discussion of clinical cases Identification of improvement actions Identification of those responsible for the implementation of improvement actions Clear identification of time for verification of implemented actions
<b>Has an Audit Manager been identified?</b>  (If yes, please indicate the Audit Manager profession/discipline and role in the Structure)	Yes No
<b>Has a Multidisciplinary Audit Team been established?</b>  (If yes, please indicate the composition of the Multidisciplinary Team)	Yes No
<b>Were additional indicators calculated and discussed compared to those contained in the last report submitted?</b>  (If yes, please indicate the additional indicators considered in the Audit, the reference year for the calculation and the result.)	Yes No
<b>Overall, were quality indicators identified that deviate from the standard value and/or the regional reference value?</b>  (If yes, please report the indicators that deviate from the reference value)	Yes No
<b>The overall results of the evaluation were disseminated to the healthcare professionals involved in the care pathway in question?</b>  (If yes, indicate the professionals to whom the reports were sent e.g. doctors, nurses, etc.)	Yes No
<b>Was an audit report produced?</b>  (If yes, please indicate the professionals to whom the report was sent)	Yes No
<b>What improvement actions have been identified? For each indicator showing deviations from the reference values, identify one or more improvement actions.</b>  Specify the timeframe in which the level of implementation of the identified improvement actions will be verified? (e.g. 1 - 2 months; 3 - 4 months; 5 - 6 months)	Free response
<b>Depending on the presence and degree of the identified deviation, were identified structure objectives to be achieved for the indicators considered?</b>	Yes No

(If yes, please report these objectives in relation to the indicators)	
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**Table S1.** Type of information collected in the “Audit form”.

**Table S2.** ICD-9-CM codes.

Indicators	Calculation	Data sources	ICD9-CM primary or secondary diagnoses codes		ICD9-CM procedures codes
			Inclusion	Exclusion	Inclusion
AMI: volume of hospitalizations	Number of hospitalizations of patients diagnosed with AMI	HDR	410.9X		
STEMI: volume of hospitalizations	Number of hospitalizations of patients diagnosed with STEMI	HDR	410.XX	410.7X, 410.9.X	
STEMI: volume of hospitalizations with at least one PTCA	Number of hospitalizations of patients diagnosed with STEMI who received at least one PTCA	HDR	410.XX	410.7X, 410.9.X	00.66, 36.01, 36.02, 36.05, 36.06, 36.07
STEMI: proportion treated with PTCA within 90 minutes	Number of hospitalized patients diagnosed with STEMI who received PTCA within 90 minutes from access to ER / Number of hospitalization of patients diagnosed with STEMI	HDR, HEIS	410.XX 411, 413, 414, 423.0, 426, 427, 428, 429.5, 429.6, 429.71, 429.79, 429.81, 518.4, 518.81, 780.01, 780.2, 785.51, 799.1, 997.02, 998.2	410.7X, 410.9.X 427.5	00.66, 36.01, 36.02, 36.05, 36.06 36.07
STEMI: proportion of PTCA within 90 minutes of those treated with PTCA within 12h	Number of hospitalized patients diagnosed with STEMI who received PTCA within 90 minutes from access to ER / Number of hospitalization of patients diagnosed with STEMI who received PTCA within 12 hours	HDR, HEIS	410.XX 411, 413, 414, 423.0, 426, 427, 428, 429.5, 429.6, 429.71, 429.79, 429.81, 518.4, 518.81, 780.01, 780.2, 785.51, 799.1, 997.02, 998.2	410.7X, 410.9.X 427.5	00.66, 36.01, 36.02, 36.05, 36.06 36.07

AMI: in-hospital mortality	Number of hospitalized patients diagnosed with AMI who died during the hospital stay / Number of hospitalized patients diagnosed with AMI	HDR, HEIS, Tax Registry	410.9X		
STEMI: in-hospital mortality	Number of hospitalized patients diagnosed with STEMI who died during the hospital stay / Number of hospitalized patients diagnosed with STEMI	HDR, HEIS, Tax Registry	410.XX 411, 413, 414, 423.0, 426, 427, 428, 429.5, 429.6, 429.71, 429.79, 429.81, 518.4, 518.81, 780.01, 780.2, 785.51, 799.1, 997.02, 998.2	410.7X, 410.9.X 427.5	00.66, 36.01, 36.02, 36.05, 36.06 36.07
AMI: 30-day mortality	Number of hospitalized patients diagnosed with STEMI who died during the 30 days after hospital discharge/ Number of hospitalized patients diagnosed with AMI	HDR, HEIS, Tax Registry			
STEMI: 30-day mortality	Number hospitalized patients diagnosed with STEMI who died during the 30 days after hospital discharge / Number of hospitalized patients diagnosed with STEMI	HDR, HEIS, Tax Registry	410.XX 411, 413, 414, 423.0, 426, 427, 428, 429.5, 429.6, 429.71, 429.79, 429.81, 518.4, 518.81, 780.01, 780.2, 785.51, 799.1, 997.02, 998.2	410.7X, 410.9.X 427.5	00.66, 36.01, 36.02, 36.05, 36.06 36.07

STEMI: ST Elevation Myocardial Infarction

PTCA: Percutaneous Transluminal Coronary Angioplasty

ER: Emergency Room

HEIS: Healthcare Emergency Information System

HDR: Italian Hospital Discharge Registry

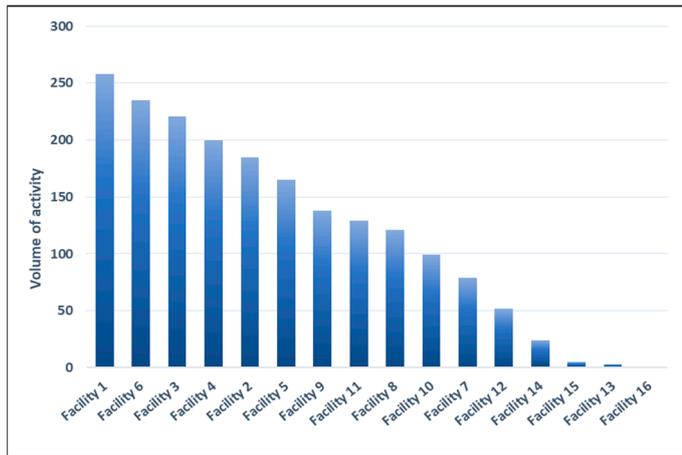
**Table S3.** Link to indicators protocols for AMI pathways.

N	Indicators	Link to indicator protocol
1	AMI: VOLUME OF HOSPITALIZATIONS	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_122.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_122.pdf</a>
2	STEMI: VOLUME OF HOSPITALIZATIONS	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_98.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_98.pdf</a>
3	STEMI: VOLUME OF HOSPITALIZATIONS WITH AT LEAST ONE PTCA	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_206.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_206.pdf</a>
4	STEMI: PROPORTION TREATED WITH PTCA WITHIN 90 MINUTES (INPATIENT FACILITY)	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_610.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_610.pdf</a>
5	STEMI: PROPORTION OF PTCA WITHIN 90' OF TOTAL TREATED WITH PTCA WITHIN 12H	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_33.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_33.pdf</a>
6	AMI: 30-DAY MORTALITY (INPATIENT FACILITY)	<i>Available upon request</i>
7	STEMI: 30-DAY MORTALITY (INPATIENT FACILITY)	<i>Available upon request</i>
8	AMI: 30-DAY MORTALITY	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_1.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_1.pdf</a>
9	STEMI: 30-DAY MORTALITY	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_7.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_7.pdf</a>

**Table S4.** Link to indicators protocols for ischemic stroke pathways.

N	Indicators	Link to indicator protocol
1	ISCHEMIC STROKE: VOLUME OF HOSPITALIZATIONS	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_125.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_125.pdf</a>
2	ISCHEMIC STROKE: NUMBER OF THROMBOLYSIS TREATMENTS AT THE FACILITY	<i>Available upon request</i>
3	ISCHEMIC STROKE: 30-DAY HOSPITAL READMISSIONS	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_19.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_19.pdf</a>
4	ISCHEMIC STROKE: IN-HOSPITAL MORTALITY	<i>Available upon request</i>
5	ISCHEMIC STROKE: 30-DAY MORTALITY AFTER FIRST ACCESS	<a href="https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_18.pdf">https://www.dep.lazio.it/prevale2021/documenti/protocolli/pro_18.pdf</a>

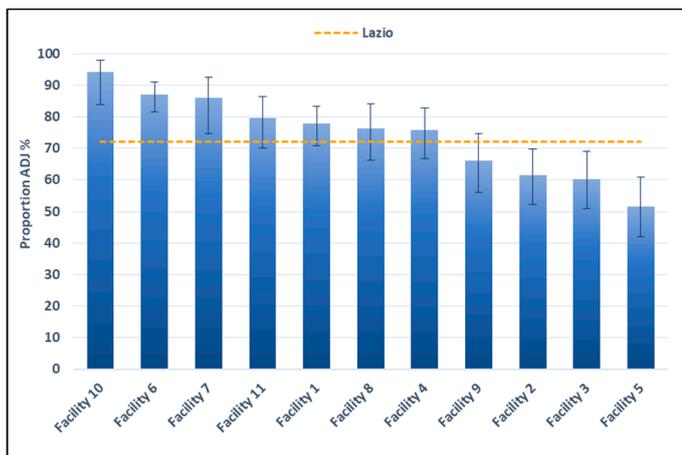
**Figure S1: Number of hospitalizations of patients with STEMI by facility (2021).**



**Table S5: Number of hospitalizations of patients with STEMI by facility (2021, 2020, 2019).**

Facility	Volume of Activity		
	2021	2020	2019
<b>Lazio</b>	<b>3249</b>	<b>3219</b>	<b>3658</b>
Facility 1	258	299	410
Facility 6	235	210	241
Facility 3	221	204	270
Facility 4	200	177	186
Facility 2	185	150	193
Facility 5	165	186	197
Facility 9	138	132	182
Facility 11	129	133	132
Facility 8	121	126	126
Facility 10	99	116	127
Facility 7	79	83	101
Facility 12	52	84	119
Facility 14	24	9	19
Facility 15	5	3	3
Facility 13	3	11	8
Facility 16	1	4	1

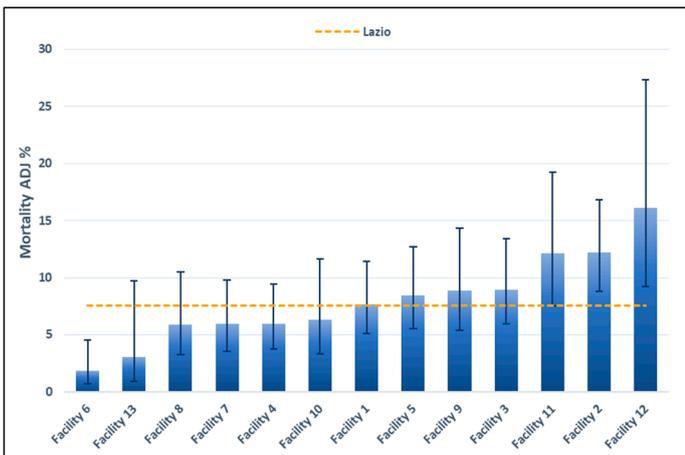
**Figure S2: Proportion of patients with STEMI treated with PTCA within 90 min from access to ER of total treated with PTCA within 12h, by facility (2021).**



**Table S6: Proportion of patients with STEMI treated with PTCA within 90 min from access to ER of total treated with PTCA within 12h, by facility (2021).**

Facility	N	Crude %	95%CI	Adj %	95%CI
<b>Lazio</b>	<b>1997</b>	<b>72.26</b>	<b>70.25</b> <b>74.18</b>	-	-
Facility 10	52	94.23	84.36 98.02	94.25	83.85 98.03
Facility 6	195	86.67	81.18 90.74	86.97	81.53 90.96
Facility 7	57	84.21	72.64 91.46	85.96	74.79 92.62
Facility 11	93	79.57	70.28 86.51	79.58	70.17 86.57
Facility 1	171	78.36	71.6 83.87	77.86	70.94 83.51
Facility 8	88	77.27	67.49 84.78	76.45	66.35 84.23
Facility 4	111	76.58	67.89 83.48	75.76	66.81 82.9
Facility 9	99	66.67	56.91 75.18	66.05	56.12 74.74
Facility 2	118	62.71	53.72 70.91	61.45	52.3 69.85
Facility 3	113	60.18	50.96 68.73	60.32	50.95 68.98
Facility 5	106	51.89	42.48 61.17	51.46	41.95 60.86
Facility 12	27	55.56	37.31 72.41	-	-
Facility 14	1	0.00	-	-	-
Facility 15	1	0.00	-	-	-
Facility 13	-	-	-	-	-
Facility 16	-	-	-	-	-

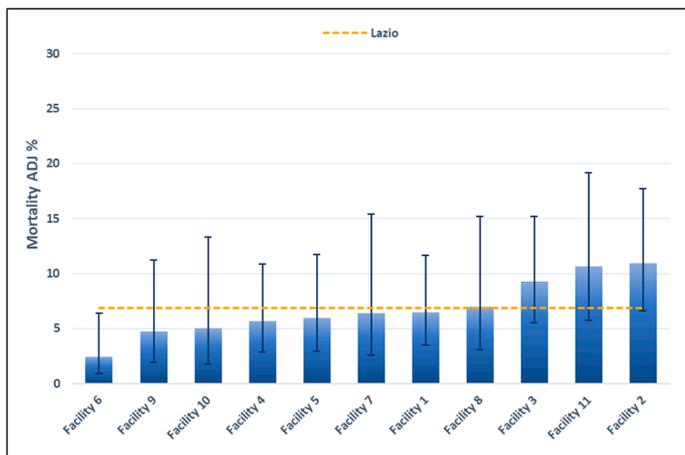
**Figure S3: Mortality within 30 days after first admission to hospital for AMI, by facility (2021).**



**Table S7: Mortality within 30 days after first admission to hospital for AMI, by facility (2021).**

Facility	N	Crude %	95%CI	Adj %	95%CI
<b>Lazio</b>	<b>6302</b>	<b>7.55</b>	<b>6.93</b> <b>8.23</b>	-	-
Facility 6	303	1.65	0.71 3.80	1.84	0.74 4.52
Facility 13	71	4.23	1.45 11.70	3.02	0.91 9.72
Facility 8	262	4.58	2.64 7.83	5.92	3.29 10.52
Facility 7	262	6.87	4.39 10.60	5.94	3.58 9.76
Facility 4	358	5.87	3.87 8.80	5.96	3.74 9.43
Facility 10	179	6.15	3.47 10.67	6.30	3.35 11.65
Facility 1	421	6.41	4.44 9.17	7.68	5.12 11.44
Facility 5	292	9.25	6.43 13.12	8.43	5.55 12.70
Facility 9	232	7.76	4.96 11.93	8.86	5.41 14.31
Facility 3	325	8.31	5.77 11.82	8.97	5.95 13.39
Facility 11	183	10.93	7.19 16.28	12.12	7.50 19.24
Facility 2	389	10.80	8.09 14.27	12.24	8.83 16.84
Facility 12	102	14.71	9.12 22.85	16.12	9.21 27.32
Facility 15	12	25.00	8.89 53.23	-	-
Facility 14	42	14.29	6.72 27.84	-	-
Facility 16	7	42.86	15.82 74.95	-	-

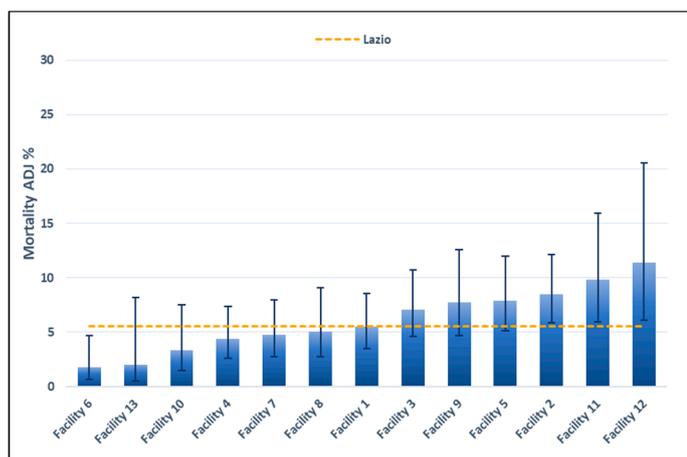
**Figure S4:** In-hospital mortality within 30 days after first admission to hospital for STEMI, by facility (2021).



**Table S8:** In-hospital mortality within 30 days after first admission to hospital for STEMI, by facility (2021).

Facility	N	Crude %	95%CI	Adj %	95%CI
<b>Lazio</b>	<b>2623</b>	<b>6.86</b>	<b>5.96</b> <b>7.89</b>	-	-
Facility 6	206	1.94	0.76 4.89	2.42	0.90 6.41
Facility 9	122	4.10	1.76 9.24	4.73	1.94 11.22
Facility 10	77	5.19	2.04 12.61	5.02	1.81 13.32
Facility 4	164	6.10	3.35 10.86	5.68	2.90 10.90
Facility 5	136	6.62	3.52 12.10	5.96	2.97 11.71
Facility 7	71	7.04	3.05 15.45	6.41	2.56 15.42
Facility 1	201	5.47	3.08 9.53	6.47	3.53 11.65
Facility 8	110	5.45	2.52 11.39	6.94	3.06 15.17
Facility 3	168	9.52	5.95 14.91	9.25	5.53 15.18
Facility 11	109	11.01	6.41 18.26	10.69	5.78 19.16
Facility 2	161	10.56	6.70 16.26	10.94	6.61 17.73
Facility 12	39	23.08	12.65 38.34	-	-
Facility 15	3	33.33	6.15 79.23	-	-
Facility 14	6	0.00	-	-	-
Facility 13	2	0.00	-	-	-
Facility 16	1	0.00	-	-	-

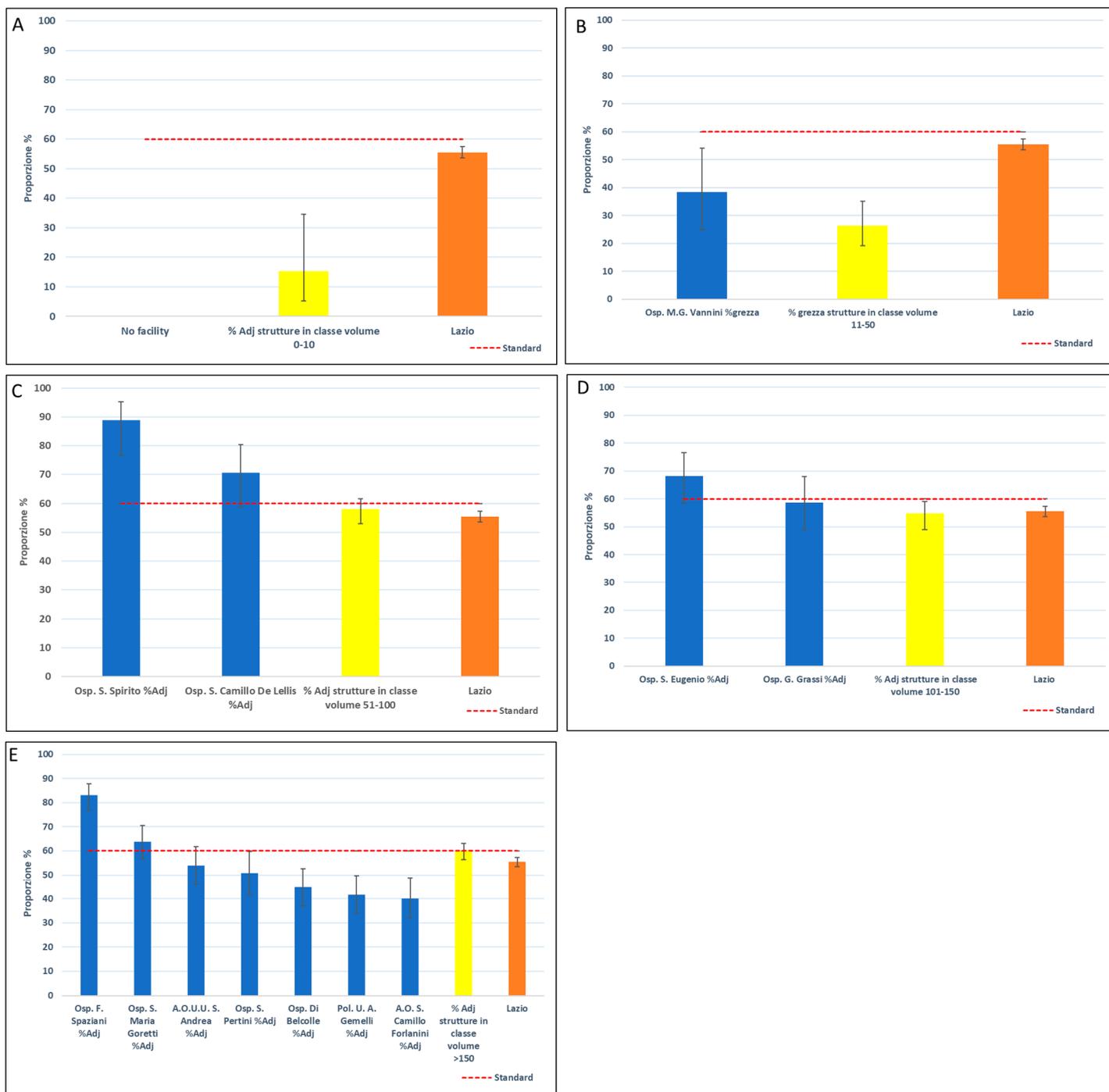
**Figure S5:** In-hospital mortality within 30 days after first admission to hospital for AMI, by facility (2021).



**Table S9:** In-hospital mortality within 30 days after first admission to hospital for AMI, by facility (2021).

Facility	N	Crude %	95%CI	Adj %	95%CI
<b>Lazio</b>	<b>6302</b>	<b>5.52</b>	<b>4.98</b> <b>6.11</b>	-	-
Facility 6	303	1.32	0.51 3.34	1.77	0.66 4.70
Facility 13	71	2.82	0.78 9.70	2.05	0.50 8.18
Facility 10	179	3.35	1.55 7.12	3.36	1.48 7.49
Facility 4	358	4.47	2.77 7.14	4.42	2.64 7.34
Facility 7	262	5.73	3.50 9.23	4.74	2.78 7.99
Facility 8	262	4.20	2.36 7.36	5.04	2.76 9.08
Facility 1	421	4.75	3.10 7.22	5.48	3.49 8.55
Facility 3	325	7.08	4.76 10.40	7.07	4.60 10.74
Facility 9	232	7.33	4.62 11.42	7.74	4.70 12.58
Facility 5	292	7.88	5.31 11.54	7.88	5.13 11.99
Facility 2	389	8.23	5.89 11.38	8.48	5.88 12.12
Facility 11	183	9.29	5.88 14.37	9.84	5.96 15.94
Facility 12	102	10.78	6.13 18.29	11.36	6.08 20.53
Facility 15	12	16.67	4.70 44.80	-	-
Facility 14	42	4.76	1.32 15.79	-	-
Facility 16	7	14.29	2.57 51.31	-	-

**Figure S6:** Proportion of patients with STEMI treated with PTCA within 90 min from access to ER, by facility (2021). A: facility in volume class 0-10, B: facility in volume class 11-50, C: facility in volume class 51-100, D: facility in volume class 101-150, E: facility in volume class  $\geq 150$ .



**Figure S7:** Mortality within 30 days after first admission to hospital for STEMI, by facility (2021). A: facility in volume class 0-10, B: facility in volume class 11-50, C: facility in volume class 51-100, D: facility in volume class 101-150, E: facility in volume class  $\geq 150$ .

