LEGENDS FOR Supplementary material

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Supplementary Table S1. Univariate and multivariable logistic regression analyses of survival to hospital discharge.

Factor	Univariate OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value
Male	1.45 (1.34–1.57)	< .001	–	–
Age, years	0.97 (0.97–0.97)	< .001	0.97 (0.97–0.98)*	< .001
Witnessed arrest	3.35 (3.06–3.68)	< .001	1.89 (1.59–2.26)*	< .001
Bystander CPR	1.19 (1.03–1.37)	.02	–	–
Arrest in public place	1.57 (1.43–1.71)	< .001	1.32 (1.12–1.56)*	< .001
Cardiac origin	0.91 (0.79–1.05)	0.18	0.76 (0.55–10.06)*	.09
Shockable EKG rhythm	4.58 (4.25–4.93)	< .001	2.54 (2.13–30.02)*	< .001
Prehospital defibrillation	3.05 (2.84–3.28)	< .001	–	–
PCI	19.41 (17.54–21.47)	< .001	8.36 (6.61–10.56)*	< .001
TTM	15.78 (14.42–17.26)	< .001	90.07 (7.59–10.81)*	< .001
Pacemaker	8.03 (5.93–10.72)	< .001	–	–
MCPR	0.80 (0.72–0.90)	< .001	0.63 (0.51–0.77)*	< .001
ECMO	6.23 (5.40–7.15)	< .001	0.69 (0.50–0.94)*	.02

Adjusted for sex, age, witnessed arrest, bystander CPR, place of arrest, cause of arrest, shockable EKG rhythm, prehospital defibrillation, PCI, TTM, Pacemaker, MCPR and ECMO. * Factors included in the final logistic regression model for survival to discharge. OR, odds ratio; CI, confidence interval; CPR, cardiopulmonary resuscitation; PCI, Percutaneous coronary intervention; TTM, Targeted temperature management; MCPR, Mechanical cardiopulmonary resuscitation; ECMO, extracorporeal membrane oxygenation.

Supplementary Table S2. Univariate and multivariable logistic regression analysis of good neurologic outcome

Factor	Univariate OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value
Male	2.11 (1.83–2.43)	< .001	–	–
Age, years	0.95 (0.95–0.95)	< .001	0.96 (0.95–0.97)*	< .001
Witnessed arrest	4.66 (3.94–5.55)	< .001	1.82 (1.35–2.49)*	< .001
Bystander CPR	1.98 (1.53–2.61)	< .001	1.57 (1.12–2.24)*	.011
Arrest in public place	20.00 (1.74–2.30)	< .001	1.41 (1.10–1.80)*	.007
Cardiac origin	2.48 (1.75–3.67)	< .001	–	–
Shockable EKG rhythm	13.41 (11.82–15.25)	< .001	5.96 (3.33–11.69)*	< .001
Prehospital defibrillation	7.94 (70.02–90.00)	< .001	1.91 (0.93–3.67)*	.06
PCI	34.97 (30.73–39.77)	< .001	10.50 (7.85–140.04)*	< .001
TTM	9.67 (8.40–11.10)	< .001	3.40 (2.55–4.50)*	< .001
Pacemaker	9.16 (60.05–13.35)	< .001	–	–
MCPR	0.64 (0.53–0.78)	< .001	0.50 (0.34–0.72)*	< .001
ECMO	9.28 (7.71–11.11)	< .001	0.55 (0.37–0.80)*	.002

Adjusted for sex, age, witnessed arrest, bystander CPR, place of arrest, cause of arrest, shockable EKG rhythm, prehospital defibrillation, PCI, TTM, Pacemaker, MCPR and ECMO. * Factors included in the final logistic regression model for survival to discharge. OR, odds ratio; CI, confidence interval; CPR, cardiopulmonary resuscitation; PCI, Percutaneous coronary intervention; TTM, Targeted temperature management; MCPR, Mechanical cardiopulmonary resuscitation; ECMO, extracorporeal membrane oxygenation.

Supplementary Table S3. Univariate and multivariate logistic regression analysis of ROSC.

Factor	Univariate OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value
Male	0.92 (0.89–0.94)	< .001	0.93 (0.88–0.99)*	.02
Age, years	10.00 (10.00–10.00)	0.49	–	–
Witnessed arrest	2.36 (2.29–2.44)	< .001	20.04 (1.93–2.17)*	< .001
Bystander CPR	0.96 (0.90–10.01)	0.14	0.89 (0.84–0.95)*	< .001
Arrest in public place	0.88 (0.85–0.92)	< .001	–	–
Cardiac origin	0.26 (0.24–0.27)	< .001	0.23 (0.20–0.26)*	< .001
Shockable EKG rhythm	10.07 (10.02–1.11)	.002	1.56 (1.37–1.78)*	< .001
Prehospital defibrillation	0.90 (0.87–0.93)	< .001	0.71 (0.63–0.80)*	< .001
MCPR	0.92 (0.88–0.96)	< .001	0.81 (0.75–0.87)*	< .001

Adjusted for sex, age, witnessed arrest, bystander CPR, place of arrest, cause of arrest, shockable EKG rhythm, prehospital defibrillation, PCI, TTM, Pacemaker, MCPR and ECMO. * Factors included in the final logistic regression model for survival to discharge. OR: odds ratio; CI: confidence interval; CPR: cardiopulmonary resuscitation; MCPR, Mechanical cardiopulmonary resuscitation.

Supplementary Table S4. Comparison between AutoPulse™ and manual CPR

	Manual CPR (N=21458)	AutoPulse™ (N=419)	*P* value
Male	13666 (63.7%)	283 (67.5%)	.12
Age, years	70.2 ± 14.7	70.8 ± 14.0	.45
Witnessed arrest	12325 (59.1%)	257 (62.7%)	.16
Bystander CPR	5537 (77.2%)	138 (70.4%)	.03
Arrest in public place	2892 (17.1%)	56 (16.7%)	.89
Cardiac origin	20247 (94.4%)	395 4.3%)	> .999
Shockable EKG rhythm	2808 (13.2%)	50 (12.0%)	.54
Prehospital defibrillation	4165 (19.4%)	78 (18.7%)	.74
PCI	530 (2.5%)	5 (1.2%)	.13
TTM	761 (3.5%)	16 (3.8%)	.87
Pacemaker	58 (0.3%)	1 (0.2%)	> .999
ECMO	369 (1.7%)	7 (1.7%)	> .999
ROSC	9130 (42.5%)	157 (37.5%)	.04
Survival to hospital discharge	852 (4.0%)	14 (3.3%)	.60
Good neurologic outcome	333 (1.6%)	4 (1.0%)	.43

Values are presented as the means ± standard deviations and frequency (proportion). CPR, cardiopulmonary resuscitation; PCI, percutaneous coronary intervention; TTM, targeted temperature management; ECMO, extracorporeal membrane oxygenation; ROSC, return of spontaneous circulation.

Supplementary Table S5. Comparison between LUCAS™ and manual CPR

	Manual CPR (N=21458)	LUCAS™ (N=5479)	*P* value
Male	13666 (63.7%)	3552 (64.8%)	.12
Age, years	70.2 ± 14.7	70.0 ± 14.8	.36
Witnessed arrest	12325 (59.1%)	3146 (58.9%)	.75
Bystander CPR	5537 (77.2%)	2054 (71.8%)	< .001
Arrest in public place	2892 (17.1%)	742 (16.5%)	.38
Cardiac origin	20247 (94.4%)	5087 (92.8%)	< .001
Shockable EKG rhythm	2808 (13.2%)	665 (12.2%)	.07
Prehospital defibrillation	4165 (19.4%)	1011 (18.5%)	.11
PCI	530 (2.5%)	159 (2.9%)	.08
TTM	761 (3.5%)	276 (5.0%)	< .001
Pacemaker	58 (0.3%)	15 (0.3%)	> .999
ECMO	369 (1.7%)	152 (2.8%)	< .001
ROSC	9130 (42.5%)	2308 (42.1%)	.58
Survival to hospital discharge	852 (4.0%)	194 (3.5%)	.15
Good neurologic outcome	333 (1.6%)	60 (1.1%)	.014

Values are presented as the means ± standard deviations and frequency (proportion). CPR, cardiopulmonary resuscitation; PCI, percutaneous coronary intervention; TTM, targeted temperature management; ECMO, extracorporeal membrane oxygenation; ROSC, return of spontaneous circulation.

Supplementary Table S6. Comparison between Thumper™ and manual CPR

	Manual CPR (N=21458)	Thumper™ (N=130)	*P* value
Male	13666 (63.7%)	86 (66.2%)	.62
Age, years	70.2 ± 14.7	68.1 ± 15.2	.11
Witnessed arrest	12325 (59.1%)	85 (70.2%)	.02
Bystander CPR	5537 (77.2%)	23 (57.5%)	.006
Arrest in public place	2892 (17.1%)	19 (18.1%)	.89
Cardiac origin	20247 (94.4%)	120 (92.3%)	.41
Shockable EKG rhythm	2808 (13.2%)	26 (20.0%)	.03
Prehospital defibrillation	4165 (19.4%)	31 (23.8%)	.25
PCI	530 (2.5%)	4 (3.1%)	.87
TTM	761 (3.5%)	13 (10.0%)	< .001
Pacemaker	58 (0.3%)	3 (2.3%)	< .001
ECMO	369 (1.7%)	3 (2.3%)	.86
ROSC	9130 (42.5%)	58 (44.6%)	.70
Survival to hospital discharge	852 (4.0%)	10 (7.7%)	.053
Good neurologic outcome	333 (1.6%)	6 (4.6%)	.014

Values are presented as the means ± standard deviations and frequency (proportion). CPR, cardiopulmonary resuscitation; PCI, percutaneous coronary intervention; TTM, targeted temperature management; ECMO, extracorporeal membrane oxygenation; ROSC, return of spontaneous circulation.

Supplementary Table S7. Univariate and multivariable logistic regression analyses of survival to hospital discharge during the COVID-19 pandemic.

Factor	Univariate OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value
Male	1.46 (1.27–1.67)	< .001	–	–
Age, years	0.97 (0.97–0.97)	< .001	0.98 (0.97–0.99)*	< .001
Witnessed arrest	3.14 (2.69–3.68)	< .001	1.62 (1.22–2.17)*	.001
Bystander CPR	1.26 (0.99–1.61)	.066	–	–
Arrest in public place	1.65 (1.40–1.92)	< .001	1.40 (10.05–1.84)*	.020
Cardiac origin	10.05 (0.81–1.38)	.719	–	–
Shockable EKG rhythm	5.45 (4.79–6.19)	< .001	2.65 (1.97–3.56)*	< .001
Prehospital defibrillation	3.55 (3.13–40.02)	< .001	–	–
PCI	23.87 (20.20–28.19)	< .001	10.24 (7.19–14.56)*	< .001
TTM	17.55 (15.13–20.33)	< .001	8.80 (6.50–11.85)*	< .001
Pacemaker	10.72 (6.44–17.31)	< .001	3.49 (10.07–10.43)*	.030
MCPR	0.91 (0.78–10.05)	.209	–	–
ECMO	7.62 (6.12–9.42)	< .001	–	–

Adjusted for sex, age, witnessed arrest, bystander CPR, place of arrest, cause of arrest, shockable EKG rhythm, prehospital defibrillation, PCI, TTM, Pacemaker, MCPR and ECMO. * Factors included in the final logistic regression model for survival to discharge. OR, odds ratio; CI, confidence interval; CPR, cardiopulmonary resuscitation; PCI, Percutaneous coronary intervention; TTM, Targeted temperature management; MCPR, Mechanical cardiopulmonary resuscitation; ECMO, extracorporeal membrane oxygenation.

Supplementary Table S8. Univariate and multivariate logistic regression analyses of good neurological outcomes during the COVID-19 pandemic.

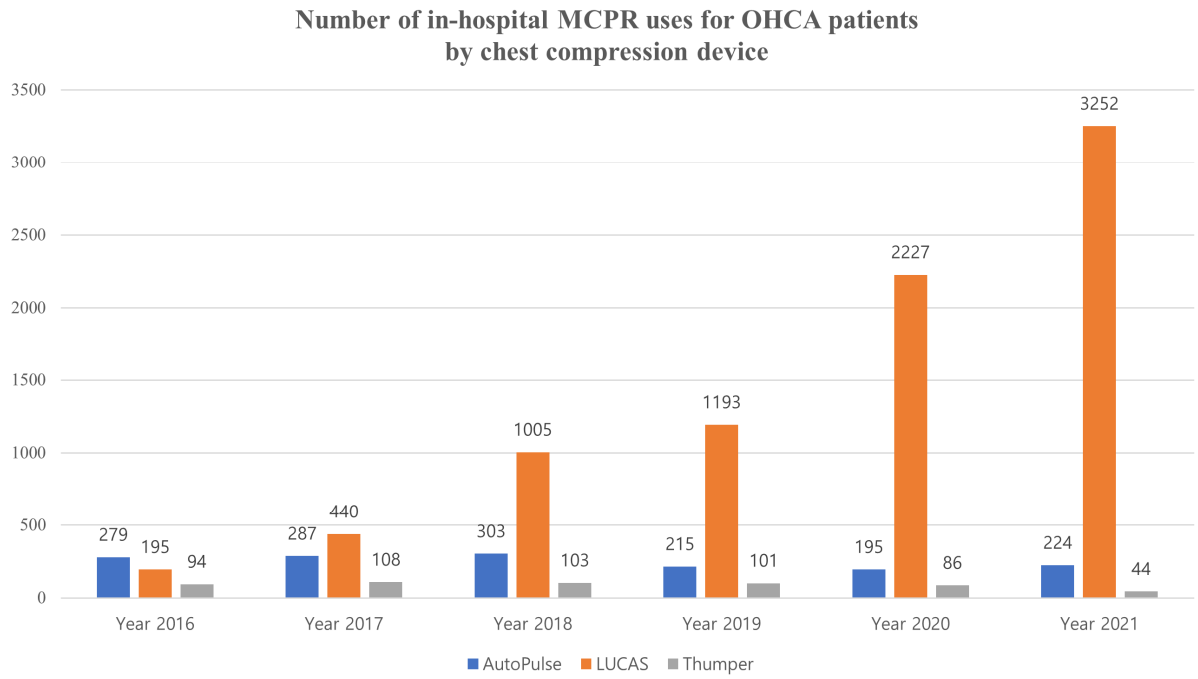
Factor	Univariate OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Male	2.26 (1.78–2.91)	< .001	–	–
Age, years	0.95 (0.95–0.96)	< .001	0.97 (0.96–0.98)*	< .001
Witnessed arrest	40.01 (30.06–5.34)	< .001	1.42 (0.90–2.30)*	0.14
Bystander CPR	1.90 (1.26–2.97)	0.003	1.98 (1.12–3.72)*	.024
Arrest in public place	20.08 (1.64–2.64)	< .001	1.56 (10.03–2.36)*	.03
Cardiac origin	3.16 (1.68–6.96)	.001	–	–
Shockable EKG rhythm	16.25 (13.10–20.27)	< .001	8.37 (4.98–14.60)*	< .001
Prehospital defibrillation	9.1 (7.38–11.26)	< .001	–	–
PCI	43.43 (350.03–53.82)	< .001	12.49 (80.03–19.51)*	< .001
TTM	10.12 (80.02–12.69)	< .001	2.76 (1.68–4.45)*	< .001
Pacemaker	12.76 (6.51–22.94)	< .001	–	–
MCPR	0.75 (0.57–0.96)	.026	0.54 (0.32–0.87)*	.014
ECMO	10.98 (8.23–14.45)	< .001	–	–

Adjusted for sex, age, witnessed arrest, bystander CPR, place of arrest, cause of arrest, shockable EKG rhythm, prehospital defibrillation, PCI, TTM, Pacemaker, MCPR and ECMO. * Factors included in the final logistic regression model for survival to discharge. OR, odds ratio; CI, confidence interval; CPR, cardiopulmonary resuscitation; PCI, Percutaneous coronary intervention; TTM, Targeted temperature management; MCPR, Mechanical cardiopulmonary resuscitation; ECMO, extracorporeal membrane oxygenation.

Supplementary Table S9. Univariate and multivariable logistic regression analyses of ROSC during COVID-19 pandemic.

Factor	Univariate OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Male	0.93	.002	–	–
Age, years	1.00 (1.00–1.00)	.569	–	–
Witnessed arrest	2.32 (2.21–2.44)	< .001	2.31 (2.18–2.45)*	< .001
Bystander CPR	0.97 (0.88–1.06)	.486	–	–
Arrest in public place	0.89 (0.83–0.95)	.001	–	–
Cardiac origin	0.27 (0.24–0.30)	< .001	0.29 (0.26–0.33)*	< .001
Shockable EKG rhythm	1.07 (1.00–1.15)	.067	1.45 (1.27–1.66)*	< .001
Prehospital defibrillation	0.90 (0.85–0.96)	< .001	0.68 (0.60–0.76)*	< .001
MCPR	0.97 (0.92–1.03)	.336	–	–

Adjusted for sex, age, witnessed arrest, bystander CPR, place of arrest, cause of arrest, shockable EKG rhythm, prehospital defibrillation, PCI, TTM, Pacemaker, MCPR and ECMO. * Factors included in the final logistic regression model for survival to discharge. OR: odds ratio; CI: confidence interval; CPR: cardiopulmonary resuscitation; MCPR, Mechanical cardiopulmonary resuscitation.



Supplementary Figure S1. Number of in-hospital MCPR uses for OHCA patients by chest compression device