Supplementary Material

Table S1. Baseline characteristics of the survey respondents

	MD N=27	RN+EMT N=40	Total N=67
Age in years, mean (SD)	34.2 (6.9)	30.0 (4.3)	31.7 (5.8)
Males, N (%)	14 (51.8%)	8 (20.0%)	22 (32.8%)
Experience as emergency department worker, N (%)			
≤2 years	8 (29.6%)	6 (15.0%)	14 (20.9%)
>2 and ≤5 years	8 (29.6%)	14 (35.0%)	22 (32.8%)
>5 and ≤10 years	3 (11.1%)	13 (32.5%)	16 (23.9%)
>10 years	8 (29.6%)	7 (17.5%)	15 (22.4%)
Type of CPR certification, N (%)			
BLS provider	12 (44.4%)	27 (67.5%)	39 (58.2%)
BLS instructor	4 (14.8%)	2 (5.0%)	6 (9.0%)
ACLS provider	19 (70.4%)	26 (65.0%)	45 (67.2%)
ACLS instructor	7 (25.9%)	3 (7.5%)	10 (14.9%)
PALS provider	1 (3.7%)	5 (12.5%)	6 (9.0%)
Number of CPR performances while wearing PAPR, N (%)			
<10 times	13 (48.5%)	23 (57.5%)	36 (53.7%)
10–19 times	9 (33.3%)	14 (35.0%)	23 (34.3%)
≥20 times	5 (18.5%)	3 (7.5%)	8 (11.9%)

MD, medical doctor; RN, registered nurse; EMT, emergency medical technician; SD, standard deviation; CPR, cardiopulmonary resuscitation; BLS, basic life support; ACLS, advanced cardiovascular life support; PALS, pediatric advanced life support; PAPR, powered air purifying respiratory

Table S2. Survey questions and answers on wearing powered air purifying respirator during resuscitation of out-of-hospital cardiac arrest patients

Questions	Survey scores, Mean (SD)			
	Total (N=67)	MD (N=27)	RN+EMT (N=40)	P-value
Q1. Health care workers' performance on the following procedures was negatively affected by wearing enhanced PPE.				
1. Overall quality in CPR performance	3.7 (0.9)	4.0 (0.9)	3.5 (0.9)	0.039
2. Intubation	3.6 (0.9)	3.8 (0.8)	3.4 (0.9)	0.108
3. Intravenous line	3.4 (1.0)	3.6 (0.8)	3.3 (1.1)	0.262
4. ABGA	3.1 (1.0)	3.3 (0.8)	3.0 (1.1)	0.203
5. Chest compression	3.5 (0.9)	3.6 (0.9)	3.5 (0.9)	0.686
6. Medication administration	2.7 (1.0)	3.1 (0.8)	2.5 (1.0)	0.009
7. Defibrillation	2.7 (1.0)	3.0 (0.9)	2.5 (1.0)	0.081
8. Patient monitoring	2.7 (1.0)	3.0 (1.0)	2.5 (1.0)	0.074
9. Resuscitation instruction	3.8 (0.8)	3.9 (0.9)	3.8 (0.8)	0.699
Q2. It was easy to don and doff.	2.0 (0.8)	2.0 (0.9)	2.1 (0.7)	0.705
Q3. It was comfortable to breathe.	4.1 (1.0)	4.1 (1.2)	4.1 (0.8)	0.803
Q4. It suppressed heat buildup appropriately.	3.7 (1.2)	4.0 (1.1)	3.5 (1.3)	0.093
Q5. Contact with contaminants seemed to be reduced.	4.2 (0.8)	4.3 (0.7)	4.1 (0.8)	0.234
Q6. It was easy to secure a clear vision.	2.4 (1.0)	2.6 (1.1)	2.3 (1.0)	0.239
Q7. There were difficulties in communication between the medical staff.	4.4 (0.9)	4.4 (1.1)	4.4 (0.8)	0.584
Q8. The movement was limited.	3.9 (0.9)	3.7 (1.0)	4.0 (0.7)	0.140
Q9. It impeded each other's movements among the medical staff.	3.9 (1.0)	3.7 (1.1)	4.1 (0.8)	0.160
Q10. There is a risk of contamination when doffing.	3.5 (0.9)	3.4 (0.9)	3.6 (0.9)	0.639

MD, medical doctor; RN, registered nurse; EMT, emergency medical technician; SD, standard deviation; CPR, cardiopulmonary resuscitation; ABGA, arterial blood gas analysis; PAPR, powered air purifying respirator

Table S3. Survey questions and answers regarding the necessity of wearing powered air purifying respirator and their reasons

	N	%
Do you think enhanced PPE is necessary during the resuscitation of OHCA patients? (Yes)	61	91.0
Why do you think PAPR is <u>necessary</u> during the resuscitation of OHCA patients?		
A. We can participate in patient management feeling self-protected	27	44.3
B. It has a positive impact on the reduction of infection rates	24	39.3
C. We need overprotection in this situation though I am not sure whether it will help to reduce the infection rate	15	24.6
Why do you think PAPR is <u>unnecessary</u> in the resuscitation process of OHCA patients?	5	7.5
A. Conventional PPE is sufficient	4	80.0
B. I think the probability of being infected with COVID-19 from patients with OHCA is very low	1	20.0
C. Too many resources required such as cost/equipment management	3	60.0
D. Disadvantages in medical treatment caused by cumbersome PPE outweigh the advantages	3	60.0

PAPR, powered air purifying respirator; PPE, personal protective equipment; OHCA, out-of-hospital cardiac arrest; COVID-19, coronavirus disease

Table S4. Free opinions on the use of enhanced personal protective equipment (advantages, disadvantages, and improvement plan in use)

	N
Negative opinions	
Difficulty in communication due to the noise of the device	24
Self-contamination risk when doffing	10
Battery life issue	9
Difficulty in auscultation	8
The long donning and doffing times cause a delay in starting CPR	7
Relative CPR manpower shortage due to the lack of PAPR quantity	7
Discomfort when donning and doffing	4
Concerns about fan malfunction and machine failure	4
Necessity of equipment inspection and re-setting before and after CPR	3
Problems with medical treatment due to limited movement	3
Assistance and monitoring are required when donning and doffing	2
Difficulty in securing visibility	2
Dull feeling when moving, interruption between medical personnel while moving	2
Dangerous for those who wear glasses because the glasses come off when doffing	2
N95 masks slipped off when doffing the hood	2
Simulation training is required regularly to prevent CPR quality loss	2
Concerns about equipment obsolescence due to equipment reuse	2
Poor durability of PAPR hood	1
PAPR hood keeps coming off	1
Headache caused by machine noise	1
PAPR hood size adjustment is difficult	1
Protection is questionable because the fitting test is not performed	1
Inconvenient during patient history taking and recording EMR	1
Positive opinions	
Wearing PAPR helps to prevent infection	2
Temperature control is easy, so we can work comfortably in CPR situations	1
It was easy to breathe while wearing PAPR hood	1

PAPR, powered air purifying respirator; CPR, cardiopulmonary resuscitation; EMR; Electronic medical record