Table 1 The criteria of medical alert team activation

Airway	Threatened, stridor
Breathing	Respiratory distress (respiratory rate > 25 or < 8 per minute)
Circulation	Systolic blood pressure < 90 or mean arterial blood pressure <60 mmHg
	Unexplained pulse rate >130 or < 50 per minute
	Sudden chest pain
Neurology	Sudden mental change (decrease in GCS of > 2 points)
	Unexplained agitation
	Unexplained seizures
Oxygenation	PaO_2 < 55 mmHg or $PaCO_2$ > 50 mmHg
	O_2 supply via nasal prong > 3 liters per minute or venturi mask > 30%
Other	Unexplained metabolic acidosis - pH < 7.3 - Lactate > 2 mmol/L - Total CO_2 < 15 mmol/L
	Hypoglycemia (glucose < 50 mg/dL)
	Bedside nurse concern about overall deterioration

Table 2 Comparison between monitored and non-monitored in baseline characteristics of in-hospital cardiac arrest

	Monitored (n = 135)	Non-monitored (n = 103)	Total (n = 238)	P-value
Age	61.9 ± 15.1	57.4 ± 15.7	61.3 ± 15.2	0.117
Sex, male	81 (60)	61 (59.2)	142 (59.7)	0.904
Onset of event, daytime (7AM to 11PM)	98 (72.6)	72 (69.9)	170 (71.4)	0.649
Illness category				
Medical illness	105 (77.8)	78 (75.7)	183 (76.9)	0.710
Underlying diseases				
Malignancy	72 (53.3)	42 (40.8)	114 (47.9)	0.055
Chronic liver disease	21 (15.6)	10 (9.7)	31 (13)	0.184
Chronic kidney disease	16 (11.9)	22 (21.4)	38 (16)	0.047
Complicated DM	13 (9.6)	16 (15.5)	29 (12.2)	0.168
Chronic lung disease	5 (3.7)	7 (6.8)	12 (5)	0.280
Heart failure	14 (10.4)	18 (17.5)	32 (13.4)	0.111
CVA	9 (6.7)	10 (9.7)	19 (8)	0.391
Peripheral vascular disease	7 (5.2)	7 (6.8)	14 (5.9)	0.601
Postoperative state	70 (51.9)	52 (50.5)	122 (51.3)	0.834
Autoimmune disease	5 (3.7)	1 (1)	6 (2.5)	0.238
Pre-existing conditions				
Malignancy	70 (51.9)	47 (45.6)	117 (49.2)	0.342
Metastasis	32 (23.7)	25 (24.3)	57 (23.9)	0.919
ACS prior	14 (10.4)	20 (19.4)	34 (14.3)	0.048

ACS present	4 (3)	8 (7.8)	12 (5)	0.093
Arrhythmia	21 (15.6)	13 (12.6)	34 (14.3)	0.522
Non-stroke	24 (17.8)	7 (6.8)	31 (13)	0.013
Stroke	3 (2.2)	5 (4.9)	8 (3.4)	0.297
CHF prior	10 (7.4)	13 (12.6)	23 (9.7)	0.177
CHF present	8 (5.9)	14 (13.6)	22 (9.2)	0.043
Hypotension	37 (27.4)	11 (10.7)	48 (20.2)	0.001
Vasopressor	22 (16.3)	10 (9.7)	32 (13.4)	0.140
Hypertension	45 (33.3)	53 (51.5)	98 (41.2)	0.005
DM	38 (28.1)	39 (37.9)	77 (32.4)	0.112
Hepatic insufficiency	30 (22.2)	9 (8.7)	39 (16.4)	0.005
Pneumonia	18 (13.3)	8 (7.8)	26 (10.9)	0.173
Respiratory insufficiency	54 (40)	4 (3.9)	58 (24.4)	<0.001
Septicemia	14 (10.4)	5 (4.9)	19 (8)	0.120
Renal insufficiency	33 (24.4)	34 (33)	67 (28.2)	0.145
Metabolic abnormality	27 (20)	6 (5.8)	33 (13.9)	0.002
HIV infection	1 (0.7)	0 (0)	1 (0.4)	1.000
Interventions in place before event				
Vascular access	128 (94.8)	88 (85.4)	216 (90.8)	0.013
Supplement of oxygen	108 (80)	38 (36.9)	146 (61.3)	<0.001
IV vasoactive agent	27 (20)	12 (11.7)	39 (16.4)	0.085
Invasive airway*	34 (25.2)	3 (2.9)	37 (15.5)	<0.001
IV opioid agents	26 (19.3)	10 (9.7)	36 (15.1)	0.042

Mechanical ventilation	15 (11.1)	0 (0)	15 (6.3)	<0.001
Intra-arterial catheter	8 (5.9)	1 (1)	9 (3.8)	0.082
Chest tube	2 (1.5)	3 (2.9)	5 (2.1)	0.655
IV antiarrhythmic agent	4 (3)	0 (0)	4 (1.7)	0.135
PCA	0 (0)	3 (2.9)	3 (1.3)	0.080
Pacemaker, internal	0 (0)	2 (1.9)	2 (0.8)	0.186
ICD	1 (0.7)	1 (1)	2 (0.8)	1.000

Data are presented as n (%).

ACS, acute coronary syndrome; CHF, congestive heart failure; CVA, cerebrovascular accidents; DM, diabetes mellitus; ECG, electrocardiography; HIV, human immunodeficiency virus; ICD, implantable cardioverter-defibrillator; and PCA, patient controlled analgesia

*Invasive airway: tracheostomy in 12 and endotracheal intubation in 25.

Table 3 Comparison between monitored and non-monitored in in-hospital cardiac arrests characteristics

	Monitored (n = 135)	Non-monitored (n = 103)	Total (n = 238)	P-value
First documented rhythm				0.024
Pulseless VT/VF	17 (12.6)	17 (16.5)	34 (14.3)	
PEA	63 (46.7)	28 (27.2)	91 (38.2)	
Asystole	25 (18.5)	25 (24.3)	50 (21)	
Unknown	30 (22.2)	33 (32)	63 (26.5)	
Immediate cause of event				0.136
Cardiac	40 (29.6)	40 (38.8)	80 (33.6)	
Pulseless VT/VF	13 (9.6)	16 (15.5)	29 (12.2)	
Acute coronary syndrome	4 (3)	10 (9.7)	14 (5.9)	
Acute pulmonary edema	9 (6.7)	5 (4.9)	14 (5.9)	
Acute pulmonary embolism	8 (5.9)	1 (1)	9 (3.8)	
Other*	5 (3.7)	7 (6.8)	12 (5)	
Unknown	1 (0.7)	1 (1)	2 (0.8)	
Non-cardiac	95 (70.4)	63 (61.2)	158 (66.4)	
Cerebrovascular	4 (3)	2 (1.9)	6 (2.5)	
Asphyxia/Airway problem	15 (11.1)	22 (21.4)	37 (15.5)	
Hypovolemic shock	22 (16.3)	13 (12.6)	35 (14.7)	
Septic shock	24 (17.8)	3 (2.9)	27 (11.3)	
Acute respiratory insufficiency	24 (17.8)	17 (16.5)	41 (17.2)	
Anaphylaxis	5 (3.7)	4 (3.9)	9 (3.8)	
Other†	1 (0.7)	2 (1.9)	3 (1.3)	
Arrived time, min	1 (0.5-2)	1 (0.5-2)	1 (0.5-2)	0.485
Duration of CPR, min	12 (5-30)	20 (10-38)	14 (5-32)	0.096
Duration of CPR, min				0.113
0-15	23 (17)	29 (28.2)	126 (52.9)	
15-35	35 (25.9)	25 (24.3)	60 (25.2)	
>35	77 (57)	49 (47.6)	52 (21.8)	
ROSC, min	11 (5-20)	16 (6.25-27.5)	12 (5-21)	0.188

Pharmacologic treatments				
Epinephrine	125 (92.6)	92 (89.3)	217 (91.2)	0.378
Atropine	109 (80.7)	87 (84.5)	196 (82.4)	0.455
Fluid bolus	103 (76.3)	88 (85.4)	191 (80.3)	0.079
Sodium bicarbonate	25 (18.5)	33 (32)	58 (24.4)	0.016
Calcium chloride/gluconate	11 (8.1)	11 (10.7)	22 (9.2)	0.504
Amiodarone	5 (3.7)	10 (9.7)	15 (6.3)	0.059
Other‡	14 (5.9)	1 (2.9)	15 (6.3)	0.704
Interventions at time of event				
Bag-valve-mask	133 (98.5)	101 (98.1)	234 (98.3)	1.000
Intubation	84 (62.2)	83 (80.6)	167 (70.2)	0.002
Laboratory	44 (32.6)	47 (45.6)	91 (38.2)	0.040
Blood sugar test	34 (25.2)	32 (31.1)	66 (27.7)	0.315
Defibrillation	27 (20)	26 (25.2)	53 (22.3)	0.335
Vasoactive infusion	26 (19.3)	15 (14.6)	41 (17.2)	0.342
Documentation of invasive airway placement				0.762
Auscultation	57 (67.9)	55 (66.3)	112 (67.1)	
Capnography	22 (26.2)	23 (27.7)	45 (26.9)	
Esophageal detector device	5 (6)	5 (6)	10 (6)	

Data are presented as n (%).

*Other causes: aortic dissection in 3, rupture of aneurysm in 2, air embolism in 2, other arrhythmia in 2, related to procedure in 1, and progression of aortic stenosis in 1.

†Other causes: metabolic acidosis in 2 and hypoglycemia in 1.

‡Other: magnesium sulfate in 9, vasopressin in 5, lidocain in 2, and intravenous 50% dextrose in 2.

CPR, cardiopulmonary resuscitation; PEA, pulseless electrical activity; ROSC, return of spontaneous circulation; and VT/VF, ventricular tachycardia/ventricular fibrillation.

Table 4 Comparison between monitored and non-monitored in outcomes of in-hospital cardiac arrests

	Monitored (n = 135)	Non-monitored (n = 103)	Total (n = 238)	P-value
ROSC, achieved	87 (64.4)	64 (62.1)	151 (63.4)	0.714
Survival to hospital discharge	22 (16.3)	24 (23.3)	46 (19.3)	0.175

Data are presented as n (%)

ROSC, return of spontaneous circulation

Table 5 Comparison of preventable and nonpreventable cases according to preexsiting conditions

Preexisting condition	Preventable (n = 91)	Nonpreventable (n = 147)	*p*
Cancer	50 (55)	67 (46)	0.160
Metastatic cancer	33 (36)	24 (16)	< 0.001
ACS prior	8 (9)	26 (1)	0.057
ACS present	2 (2)	10 (7)	0.138
Arrhythmia	7 (8)	27 (18)	0.022
Acute mental change	19 (21)	12 (8)	0.005
Stroke	3 (3)	5 (3)	1.000
CHF prior	8 (9)	15 (10)	0.720
CHF present	1 (1)	21 (14)	0.001
Hypotension	20 (22)	28 (19)	0.584
Vasopressor	8 (9)	24 (16)	0.098
Hypertension	28 (31)	70 (48)	0.010
DM	33 (36)	44 (30)	0.310
Hepatic insufficiency	17 (19)	22 (15)	0.458
Pneumonia	13 (14)	13 (9)	0.191
Respiratory insufficiency	37 (41)	21 (14)	< 0.001
Septicemia	8 (9)	11 (8)	0.717
Renal insufficiency	26 (27)	41 (28)	0.910
Metabolic abnormality	24 (26)	9 (6)	< 0.001
HIV	1 (1)	0 (0)	0.382

Data are presented as n (%).

ACS, acute coronary syndrome; CHF, congestive heart failure; CVA, cerebrovascular accidents; DM, diabetes mellitus; ECG, electrocardiography; and HIV, human immunodeficiency virus.