Quality Assessment of Instructions for Dispatcher-Assisted Telephone Cardiopulmonary Resuscitation (DAT-CPR) Performed Between Emergency Medical Technicians (EMTs) and Registered Nurses (RNs)

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Purpose

Quality of DAT-CPR instructions between EMTs and RNs are not well known. In vertical dispatch call-taker and CPR instructor would be the same EMT; in horizontal dispatch call-taker would be EMT while CPR instructor could be RN to takeover the calls of recognized out-of hospital cardiac arrest (OHCA). This study was to compare the quality of DAT-CPR instructions between EMTs and RNs.

Materials and methods

- One-year observational database prospectively collected from OHCA-DAT-CPR registry
- After call-takers recognizing patients as cardiac arrest, they could directly launch DAT-CPR instructions by themselves (iEMT) or transfer calls to RN (iRN) for DAT-CPR instructions.
- All audio call records eligible for non-traumatic OHCA were assessed by experienced third person afterward.
- Quality outcomes included: bystander-starting chest compressions, persistent online CPR instruction until ambulance arrival (I-persistence), continual instruction and accompany bystander until compressions handover by paramedics at scene (I-handover), and time periods between recognition, instruction, and chest compression

Figure 1. Patients with OHCA and received DAT-CPR during the study period included in the analysis

Table 1. The characteristic of OHCA patient with DAT-CPR

	OHCA N = 1574 n (%)
Age (yrs)	75.8
Gender	
Male	900 (57.2)
Female	674 (42.8)
Chest Compression (1574)	
Yes	1319 (83.8)
No	255 (16.2)
CPR Instruction (1574)	
iRN	252 (16.0)
iEMT	1322 (84.0)
I-persistence* (1530)	
Yes	1217 (79.5)
No	313 (20.5)
I-handover** (1470)	
Yes	823 (56.0)
No	647 (44.0)

Table 2. Outcomes and Comparisons between RNs and EMTs DAT-CPR Instructions

	iRN N = 252 n (%)	iEMT N = 1322 n (%)	P value
Age (yrs)	75.4	75.8	0.68
Male	149 (59.1)	751 (56.8)	0.50
Chest Compression	203 (80.6)	1116 (84.4)	0.13
I-persistence*	165 (69.9)	1052 (81.3)	<0.001
I-handover**	76 (34.4)	747 (59.8)	<0.001
Time from OHCA recognition to CPR instruction (sec)	47.4	34.2	<0.001
Time from initiating instruction to first chest compression (sec)	80.6	79.8	0.83

* I-persistence = persistent online CPR instruction until ambulance arrival

** I-handover = continual instruction and accompany bystander until compressions handover by paramedics at scene

Results

A total of 1,574 eligible patients and call records were analyzed. Bystander chest compressions were delivered on 83.8% of patients, no difference between iEMT and iRN (84.4% versus 80.6%, $p=0.13$). iEMT had higher rates of I-persistence (81.3% versus 69.9%, $p<0.01$; aOR:1.9 [95% CI 1.4-2.5]) and I-handover (59.8% versus 34.4%, $p<0.01$; aOR: 2.8 [95% CI 2.1-3.8]) than iRN. There was no time difference from initiating instruction till first chest compression between two groups (iEMT 79.8sec versus iRN 80.6sec, $p=0.83$). Time from OHCA recognition to CPR instruction was faster while instructors were iEMT (34.2sec versus 47.4sec, $p<0.01$).

Conclusions

Well-trained EMTs may perform better DAT-CPR instructions than RNs for persistence and continuity until chest compressions handover by paramedic professionals, and shorter time from recognition-to-instruction.