10-2

IMPROVING QUALITY OF CHEST COMPRESSIONS AMONGST MEDICAL AND NURSING STAFF THROUGH DELIBERATE IN-SITU PRACTICE WITH FEEDBACK AND THE IMPACT OF REPEATED TRAINING

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Background: quality of chest compressions underpins resuscitation outcomes with poorer performance leading to lower survival rates[1]. We aimed to analyse whether deliberate practice of chest compressions with feedback improves quality of compression amongst PICU nursing and medical staff and the impact of repeated training at 2, 4 and 6 months.

Methods: prospective, longitudinal study with in-situ workshops utilising Resusci Baby® QCPR®. Components analysed were hand position, correct & average rate, depth and recoil, a combination of which resulted in overall scores. Study protocol and consent procedure were approved by the Trust's Research Office.

Results: 56 participants (14 doctors, 42 nurses) of which 49 (87.5%) completed all workshops. There was a significant improvement on overall, depth, recoil and rate scores immediately after feedback on all workshops (table 1). A significant improvement was also noted on baseline scores over time: complete recoil from 2nd session (72%, IQR 20-98% vs. 98%, IQR 82-100%, p=0.003); overall, depth, correct and average rate at 4 months in comparison to the first session (84%, IQR 49-94% vs. 95%, IQR 87-98%, p<0.001; 97%, IQR 45-100% vs. 100%, IQR 98-100%, p<0.001; 14%, IQR 1-83% vs. 65%, IQR 30-90%, p=0.002; 119bpm, IQR 113-129bpm vs. 112bpm, IQR 101-118bpm, p=0.01, respectively). Hand position baseline scores did not significantly change over time.

Conclusion: deliberate practice of chest compressions with continuous feedback improves quality of compression amongst PICU nursing and medical staff. This effect is noted immediately and over time with repeated training.

Table 1. Assessment at baseline and after feedback for each workshop

	First workshop (*n*=56)			Second workshop (*n*=55)			Third workshop (*n*=53)			Fourth workshop (*n*=51)		
	Baseline	After feedback	*p*	Baseline	After feedback	*p*	Baseline	After feedback	*p*	Baseline	After feedback	*p*
Overall score (%)	84 (49-94)	98 (97-99)	<0.001	93 (43-98)	99 (98-99)	<0.001	95 (87-98)	99 (98-99)	<0.001	98 (86-99)	99 (98-99)	0.001
Correct hand position (%)*	100 (100-100)	100 (100-100)	0.72	100 (94-100)	100 (100-100)	<0.001	100 (100-100)	100 (100-100)	0.07	100 (100-100)	100 (100-100)	0.4
Correct depth (%)	97 (45-100)	100 (99-100)	<0.001	99 (93-100)	100 (100-100)	0.006	100 (98-100)	100 (100-100	0.001	100 (97-100)	100 (99-100)	0.02
Complete recoil (%)	72 (20-98)	99 (87-100)	<0.001	98 (82-100)	100 (97-100)	<0.001	98 (79-100)	100 (97-100)	<0.001	98 (84-100)	100 (94-100)	0.002
Average rate (bpm)*	119 (113-129)	113 (106-118)	0.03	115 (103-128)	114 (109-117)	0.28	112 (101-118)	111 (107-115)	0.37	112 (107-115)	112 (108-117)	0.68
Correct rate (%)*	14 (1-83)	89 (61-98)	<0.001	60 (3-83)	94 (73-98)	<0.001	65 (30-90)	93 (79-99)	<0.001	81 (51-99)	96 (79-100)	0.01

Values shown as median (IQR). * Missing values on 1st workshop: 2 and 1 for hand position on baseline and after feedback assessment, and 16 for average rate on both assessments.

References:

1 - D Yannopoulos, TP Aufderheide, BS Abella, *et al*. Quality of CPR: An important effect modifier in cardiac arrest clinical outcomes and intervention effectiveness trials. Resuscitation 2015;94:106-13.