Table one: study design

	Pre-intervention (Nov 2011 -May 2013)	Post-intervention (Sept 2013-July 2014)
Hospital one	Weekly group debriefing*	Monthly group debriefing*
Hospital two	No debriefing*	Oral personal debriefing*
Hospital three	No debriefing	Written Feedback*

Key: * Real-time audiovisual feedback provided

Table two: overview of intervention delivery

	Hospital one	Hospital two	Hospital three
Cardiac arrest event summary			
Number of events in study period	221	109	86
Number of events suitable for debriefing	-	43 (39%)	41 (48%)
Reason why not suitable- n(%)			
Less than five minutes	-	17 (16%)	16 (19%),
No accelerometer data	-	15 (14%)	10 (12%)
Less than five minutes and no accelerometer data	-	29 (27%).	16 (19%).
Other	-	5 (5%)	3 (3%)
Intervention delivery			
Number of clinicians identified that attended events eligible for debriefing		211 (126 unique clinicians)	252 (129 unique clinicians)
Number of times intervention delivered	11 meetings- 19 events discussed/ (140 attendances by 85 clinicians)	94 (45%) occasions 62 (49%) unique clinicians	110 (44%) occasions 54 (42%) unique clinicians
Attendees per meeting- mean (SD)	13 (SD=5)	-	-
Recipients by professional role- n(%)			
Consultant	10 (12%)	1 (2%)	1 (2%)
Registrar	11 (13%)	6 (10%)	12 (22%)
Junior doctor	25 (29%)	26 (42%)	16 (30%)
Nurse	7 (8%)	19 (31%)	11 (20%)
Critical Care Practitioner/ Outreach	6 (7%)	7 (11%)	12 (22%)
Resuscitation Officer	4 (5%)	2 (3%)	1 (2%)
Healthcare student	17 (20%)	1 (2%)	1 (2%)
Other	5 (6%)	0	0
Attendances per clinician- median (IQR)	1 (1-2)	1 (1-2)	2 (1-3)
Reasons for non-delivery- n(%)			
Difficulty contacting clinician	-	104 (89%)	121 (48%)
Unable to schedule	-	2 (2%),	-
Clinician refusal	-	2 (2%),	1 (0.4%).
Clinician did not attend/ recall event	-	9 (8%),	20 (8%)

* Examples of other reasons include subject to a clinical review outside of the research process and arrest events that occurred just prior to the study end so there was no opportunity to offer debriefing.

Table three: demographic details and arrest characteristics by hospital site

	All hospitals			Hospital one			Hospital two			Hospital three		
	Pre-intervention (n=782)	Post-intervention (n=416)	P-value*	Pre-intervention (n=371)	Post-intervention (n=221)	P-value*	Pre-intervention (n=189)	Post-intervention (n=109)	P-value*	Pre-intervention (n=222)	Post-intervention (n=86)	P-value*
Age- median (IQR)†	76 (66-84)	76 (66-84)	0.933	75 (63-83)	75 (65-83)	0.300	77 (71-85)	81 (67-85)	0.807	78 (68-84)	75 (64-84)	0.250
Male sex- n (%)	465 (59.5%)	251 (60.3%)	0.805	225 (60.6%)	131 (59.3%)	0.795	106 (56.1%)	62 (56.9%)	0.904	134 (60.4%)	58 (67.4%)	0.295
Patient category- n(%)‡												
Medical	686 (87.7%)	373 (89.7%)		318 (85.7%)	189 (85.5%)		151 (79.9%)	100 (91.7%)		217 (97.7%)	84 (97.7%)	
Surgical	94 (12.0%)	34 (8.2%)		53 (14.3%)	25 (11.3%)		36 (19.0%)	7 (6.4%)		5 (2.3%)	2 (2.3%)	
Trauma	2 (0.3%)	9 (2.2%)	0.001	0	7 (3.2%)	0.002	2 (1.1%)	2 (1.8%)	0.01	0	0	0.969
Initial rhythm- n (%)‡												
VF	92 (11.8%)	64 (15.4%)		47 (12.7%)	31 (14.0%)		12 (6.3%)	13 (11.9%)		33 (14.9%)	20 (23.3%)	
VT	45 (5.8%)	14 (3.4%)		25 (6.7%)	7 (3.2%)		11 (5.8%)	4 (3.7%)		9 (4.1%)	3 (3.5%)	
PEA	377 (48.2%)	209 (50.2%)		181 (48.8%)	112 (50.7%)		98 (51.9%)	57 (52.3%)		98 (44.1%)	40 (46.5%)	
Asystole	204 (26.1%)	100 (24.0%)		86 (23.2%)	55 (24.9%)		50 (26.5%)	26 (23.9%)		68 (30.6%)	19 (22.1%)	
Unknown	64 (8.2%)	29 (7.0%)	0.132	32 (8.6%)	16 (7.2%)	0.398	18 (9.5%)	9 (8.3%)	0.477	14 (6.3%)	4 (4.7%)	0.336
Witnessed- n(%)	504 (64.5%)	307 (73.8%)	0.001	253 (68.2%)	172 (77.8%)	0.014	117 (61.9%)	70 (64.2%)	0.711	134 (60.4%)	65 (75.6%)	0.012
Monitored- n(%)	322 (41.2%)	153 (36.8%)	0.154	178 (48.0%)	93 (42.1%)	0.173	64 (33.9%)	32 (29.4%)	0.443	80 (36%)	28 (32.6%)	0.597
OOHCA- n(%)	113 (14.5%)	41 (9.9%)	0.024	7 (1.9%)	1 (0.5%)	0.269	11 (5.8%)	2 (1.8%)	0.143	95 (42.8%)	38 (44.2%)	0.898

* P-value by Fisher-exact test unless stated. † By Mann-Whitney U test. ‡ By chi-squared test

IQR- interquartile range; VF- ventricular fibrillation, VT- ventricular tachycardia, PEA- pulseless electrical activity, OOHCA- out-of-hospital cardiac arrest

Table four: overview of CPR quality outcomes

	Pre-intervention	Post-intervention	P-Value*
Monthly group debrief (hospital one)			
CC depth (mm)- mean (SD)	53.2 (10.4)	57.2 (12.4)	0.005
CC rate (/min)- mean (SD)	115.4 (10.8)	113.9 (8.9)	0.21
CC flow-fraction (%)- mean (SD)	84.7 (6.8)	83.8 (7.9)	0.31
CC incomplete recoil (%)			
Mean (SD)	15.3 (16.3)	15.8 (17)	
Median (IQR)	10.3 (4.2-20.4)	8.2 (4.3-23.1)	0.90†
Pre-shock pause (secs)			
Mean (SD)	6.3 (7.5)	5.6 (6.8)	
Median (IQR)	2.7 (1.6-9.7)	2.9 (1.5-6.3)	0.92†
Post-shock pause (secs)			
Mean (SD)	2.4 (1.0)	2.4 (1.1)	
Median (IQR)	2.1 (1.8-2.8)	2.3 (1.7-2.7)	0.91†
Individual debrief (hospital two)			
CC depth (mm)- mean (SD)	49.0 (10.0)	51.1 (9.95)	0.24
CC rate (/min)- mean (SD)	116.5 (10.4)	117.5 (9.7)	0.55
CC flow-fraction (%)- mean (SD)	82.9 (6.8)	84.5 (6.1)	0.15
CC incomplete recoil (%)			
Mean (SD)	16.0 (13.8)	13.3 (15.2)	
Median (IQR)	11.9 (4.7-24.5)	8.7 (2.6-18.0)	0.12†
Pre-shock pause (secs)			
Mean (SD)	9.4 (9.1)	5.2 (5.4)	
Median (IQR)	6.4 (3.0-11.8)	3.3 (1.8-4.6)	0.12†
Post-shock pause (secs)			
Mean (SD)	3.5 (3.0)	2.5 (1.2)	
Median (IQR)	3.0 (1.8-3.7)	2.1 (1.9-2.6)	0.29†
Written feedback (hospital three)			
CC depth (mm)- mean (SD)	50.5 (10.2)	51.5 (11.9)	0.63
CC rate (/min)- mean (SD)	117.4 (12.1)	113.7 (9.8)	0.04
CC flow-fraction (%)- mean (SD)	87.1 (7.1)	88.2 (6.3)	0.33
CC incomplete recoil (%)			
Mean (SD)	20.7 (22.5)	15.9 (18.9)	
Median (IQR)	10.4 (2.9-36.4)	7.7 (3.1-24.3)	0.39†
Pre-shock pause (secs)			
Mean (SD)	9.0 (8.6)	5.6 (4.8)	
Median (IQR)	5.3 (3.3-12.5)	2.40 (2.1-10.3)	0.11†
Post-shock pause (secs)			
Mean (SD)	2.7 (1.2)	2.6 (1.4)	
Median (IQR)	2.3 (1.8-3.4)	2.3 (1.9-2.6)	0.80†
All hospitals			
CC depth (mm)- mean (SD)	51.4 (10.4)	54.3 (12.0)	0.004
CC rate (/min)- mean (SD)	116.3 (11.1)	114.8 (9.5)	0.09
CC flow-fraction (%)- mean (SD)	85.0 (7.05)	85.0 (7.26)	0.98
CC incomplete recoil (%)			
Mean (SD)	16.9 (17.7)	15.1 (16.9)	
Median (IQR)	10.9 (3.7-23.6)	8.3 (3.7-21.0)	0.18†
Pre-shock pause (secs)			
Mean (SD)	8 (8.3)	5.5 (5.9)	
Median (IQR)	4.2 (2.3-11.0)	3.0 (2.0-5.9)	0.05†
Post-shock pause (secs)			
Mean (SD)	2.7 (1.7)	2.5 (1.2)	
Median (IQR)	2.30 (1.8-3.3)	2.30 (1.8-2.6)	0.50†

CC- Chest compression. *All p-values calculated using T-test, unless stated. †- By Mann-Whitney U test

Table five: patient outcome data

	Pre-intervention N (%)	Post-intervention N (%)	Effect of interventions: Unadjusted odds ratio (95% CI)	P-Value	Adjusted odds ratio (95% CI)*	P-Value
Hospital one- Monthly group debrief (342 phase one; 206 phase two)						
ROSC	191 (55.8%)	117 (56.8%)	1.04 (0.73 – 1.47)	0.83	1.04 (0.71 – 1.53)	0.83
STD	70 (20.5%)	48 (23.3%)	1.18 (0.78 – 1.79)	0.44	1.35 (0.79 – 2.30)	0.28
Neurologically intact survival (CPC 1/2)	65 (19.0%)	46 (22.3%)	1.23 (0.80 – 1.87)	0.35	1.38 (0.80 – 2.39)	0.25
Hospital two- Individual debrief (170 phase one; 103 phase two)						
ROSC	71 (41.8%)	47 (45.6%)	1.17 (0.72 – 1.92)	0.53	1.04 (0.59 – 1.85)	0.89
STD	22 (12.9%)	20 (19.4%)	1.62 (0.84 – 3.14)	0.15	1.48 (0.62 – 3.53)	0.38
Neurologically intact survival (CPC 1/2)	19 (11.2%)	12 (11.7%)	1.05 (0.49 – 2.26)	0.91	0.79 (0.27 – 2.32)	0.66
Hospital three- Written feedback (121 phase one; 44 phase two)						
ROSC	61 (50.4%)	19 (43.2%)	0.75 (0.37 – 1.50)	0.41	0.66 (0.29 – 1.51)	0.33
STD	22 (18.2%)	10 (22.7%)	1.32 (0.57 – 3.08)	0.52	1.40 (0.45 – 4.33)	0.56
Neurologically intact survival (CPC 1/2)	18 (14.9%)	7 (15.9%)	1.08 (0.42 – 2.80)	0.87	1.04 (0.28 – 3.78)	0.96
All hospitals (633 phase one; 353 phase two)						
ROSC	323 (51.0%)	183 (51.8%)	1.03 (0.80 - 1.34)	0.81	0.99 (0.74 – 1.32)	0.94
STD	114 (18.0%)	78 (22.1%)	1.29 (0.94 - 1.78)	0.12	1.36 (0.90 – 2.06)	0.14
Neurologically intact survival (CPC 1/2)	102 (16.1%)	65 (18.4%)	1.18 (0.83 – 1.66)	0.36	1.20 (0.77 – 1.87)	0.42

ROSC- Return of spontaneous circulation; STD- survival to discharge; CPC- cerebral performance category. *- excludes patients with unknown initial rhythm