FIBBING OR FAILING? POINT-OF-CARE ECHOCARDIOGRAPHY (ECHO) IN CARDIAC ARREST: A DESCRIPTIVE STUDY OF PRACTICE IN SOUTH-EAST QUEENSLAND

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BACKGROUND

Non-invasive adjunct to ACLS
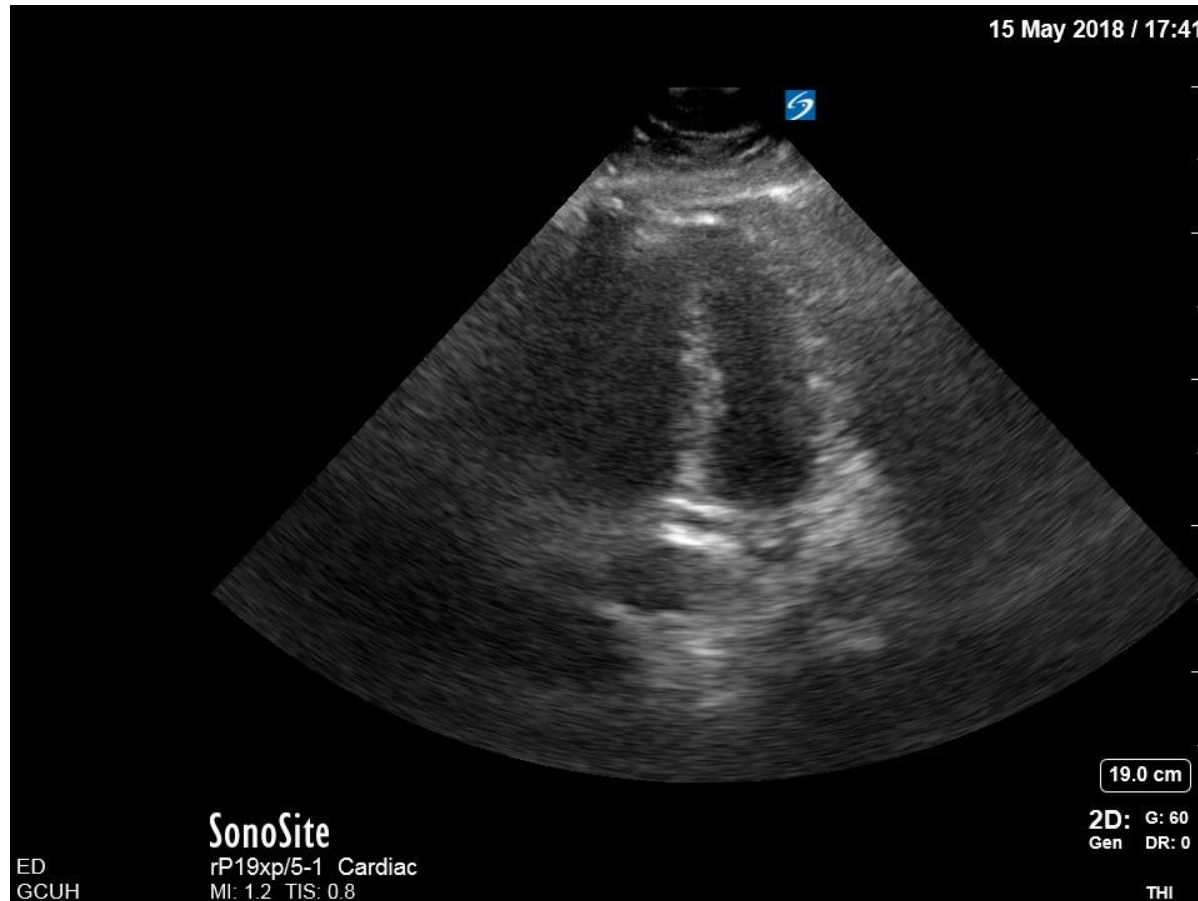
Literature supports its role in:

- **prognostication and guiding ongoing resuscitation**

- **identifying reversible causes**

- **guiding therapeutic interventions**

Particularly in non-shockable rhythms. [1]

Lack of descriptive studies regarding practice in Australia

REVERSIBLE FINDINGS

RV STRAIN -> THROMBOLYSE

REVERSIBLE FINDINGS

TAMPONADE -> PERICARDIOCENTESIS

PROGNOSTICATION

CARDIAC STANDSTILL

OR 5.7 for survival if activity present[1]

 - 0.6% survive

Defined as no myocardial movement

 - excludes valves and turbulent blood flow

OBJECTIVES

1. To determine utilization of ECHO during ACLS at two hospitals in Queensland (GCHHS)

2. To assess whether POCUS changed management

METHOD

Retrospective EMR case note audit

Cardiac arrests presenting/occurring in ED during first nine months of 2017.

- **Gold Coast University Hospital (tertiary, 750 beds)**

- **Robina Hospital (urban distract, 364 beds)**

Excluded:

<16 Years old

ARP stating NFR

RESULTS

91 eligible cases of cardiac arrest Jan-Sep 2017

69% (n=63) survived to admission

Of these survivors, 67% had initial rhythm VF/VT

Table 1 Characteristics of 91 patients with cardiac arrest in ED		
	n	%
Male	65	71.4
Location		
Out of hospital	67	73.6
In Emergency	24	26.4
Hospital		
GCUH	85	93.4
Robina	6	6.6
Initial rhythym		
Ventricular tachycardia (VT)	3	3.3
Ventricular fibrillation (VF)	41	45.1
Pulseless electrical activity (PEA)	28	30.8
Aystole	19	20.9
Disposition post ED		
Cardiac catheter suite	41	45.1
Cardiac care unit (CCU)	2	2.2
ICU	20	22
Deceased	28	30.8
Mean age(st dev)	67 years (+/-15)	

RESULTS

54%(n=49) had an ECHO performed

- 31% during ACLS

- 69% post ROSC

By underlying rhythm, ECHO was performed in

- 74% PEA

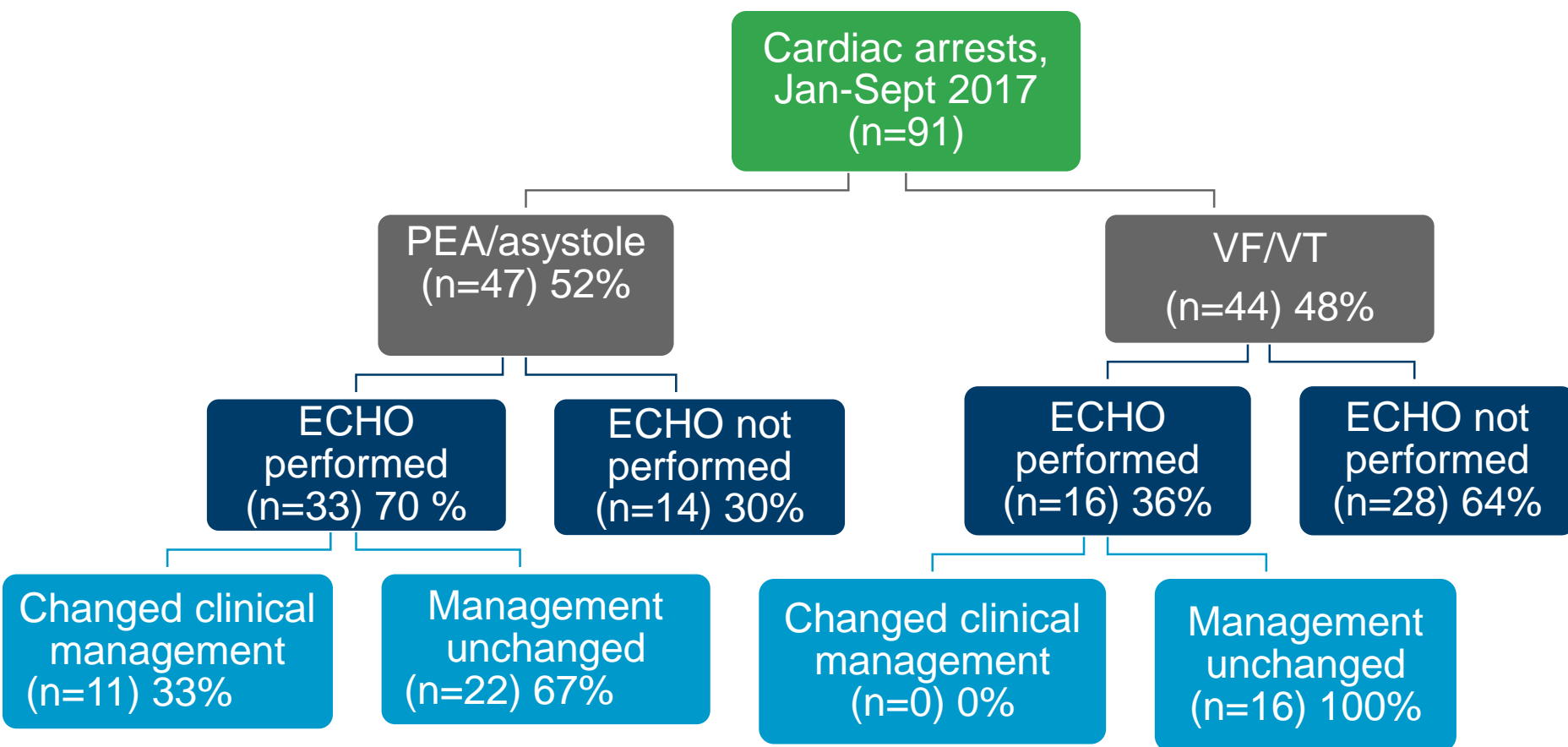- 69% asystole

- 36% VT / VF (Fig.1).

Figure 1. Utilisation of point-of-care echocardiography during cardiopulmonary arrests, and impact on clinical management

RESULTS

Reversible causes were identified in 12% (n=6) by ECHO:

- two cases of tamponade

- four cases of PE showing RV strain

All in cases of initial PEA/asystole

RESULTS

22% (n=11) ECHOs made significant difference to ED Mx:

•**Cardiac standstill identified- CPR confidently ceased (n=9)**

•**Large pulmonary embolus identified – thrombolysed (n=1)**

•**Tamponade identified- pericardiocentesis performed (n=1)**

(Commencement of inotropes not counted)

CONCLUSIONS

Scope for improvement exists in the utilisation of ECHO in ACLS

 - only half GCHHS cases utilised ECHO

This should be focussed towards non-shockable rhythms

 - cardiac standstill enables prognostication much sooner

 - valuable in the resource intensive setting of ACLS

DISCUSSION

Suggested interventions to improve utilisation of ECHO

- educational sessions regarding the utility of ECHO in ACLS

- proctored scanning sessions

- trial departmental guidelines

?Aim for ECHO <10 mins arrival of PEA/asystolic arrest

REFERENCES

1.Gaspari R et al. Emergency department point-of-care ultrasound in out-of-hospital and in-ED cardiac arrest. Resuscitation. 2016;109Z33-39

QUESTIONS?