

Rhythm changes during cardiac arrest



M Headon, B Carlin, M Steele, M Egan, G Bury

Centre for Immediate Care Services

School of Medicine & Medical Science

University College Dublin





No conflicts of interest arise for any authors

Context



What happens to ECG rhythms during resuscitation?

Initial rhythm/outcome

- 142,270 OHCA: 14.8-23% of VF/VT discharged¹

Events

- ROSC studies: 74% re-arrested², 36% re-arrested
- Median 5 'state transitions' (1-39) in 304 cases⁴

1. Sasson et al. Circ Cardiovasc Qual Outcomes 2010;3:63-81

2. Koster et al. Resus 2008;78:252-7.

3. Salcido et al. Prehospital Emer Care 2010;14:413-418

4. Skogvoll et al. Resus 2008;78:30-37.

Context



Cardiac Arrest with Resuscitation Attempts

In the initial phase of care:

- Is this a static or dynamic phase?
- Is there a relationship with outcome?
- Implications for preparation and training?

Setting



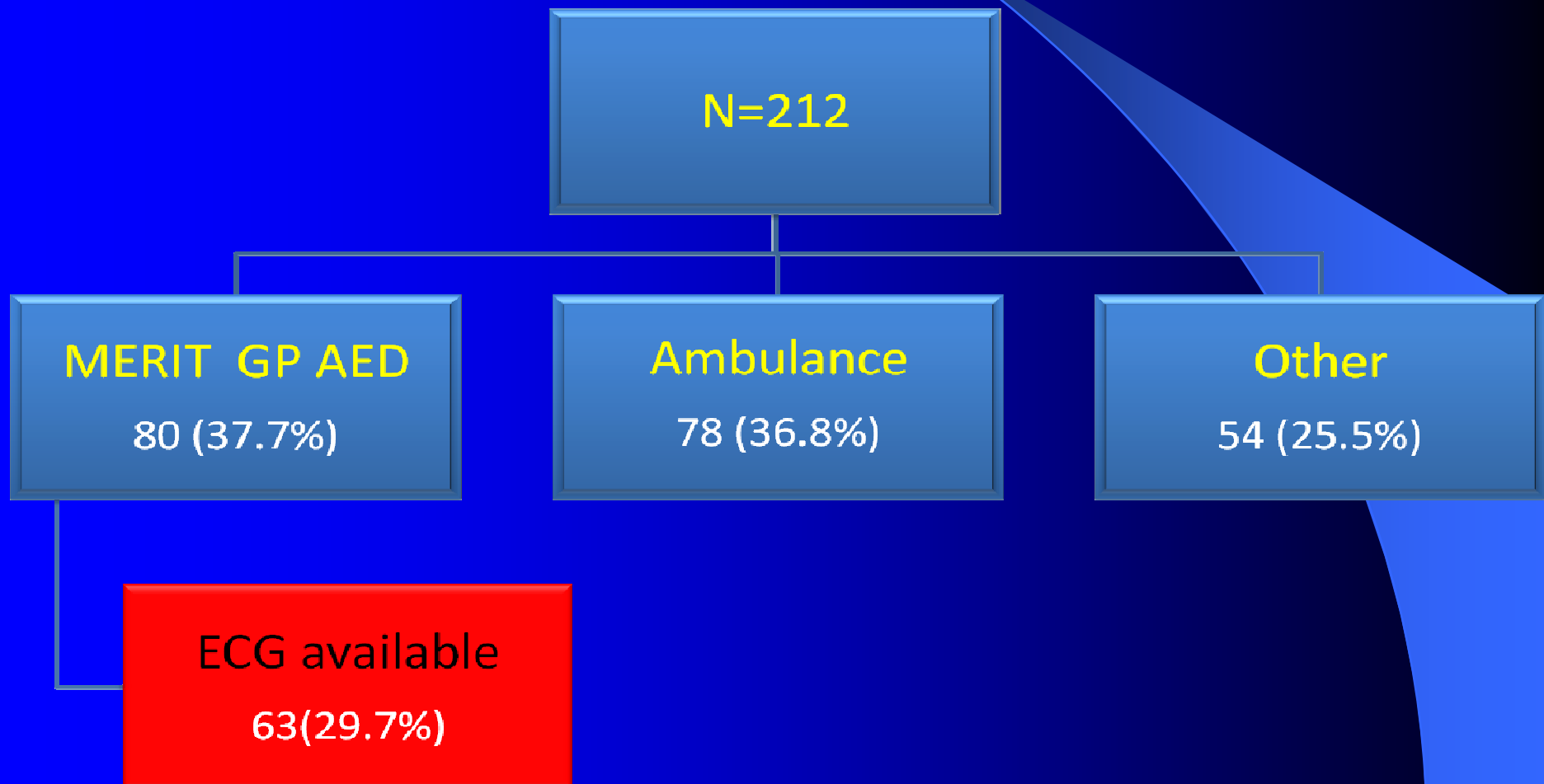
MERIT – Medical Emergency Responders Integration and Training

- Aim: to equip and train Irish general practitioners to manage cardiac arrest in the community
- 472 of approximately 900 practices participate
- FR2 defib, emergency kit, Immediate Care training
- CARA data, ECG downloads and clinical data collected





MERIT CARAs





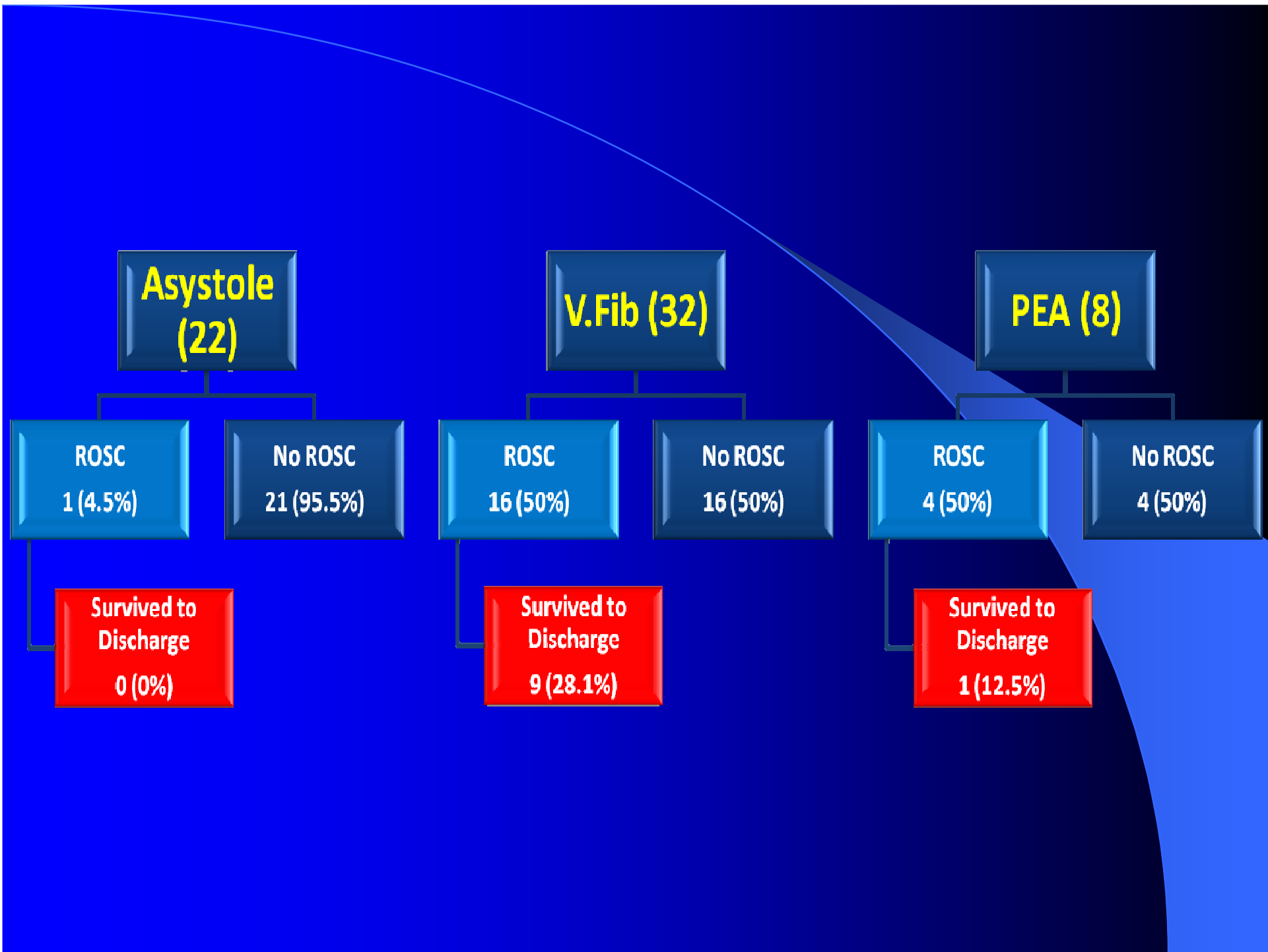
CARA ECGs x 63

Characteristics

- 64% male, median age 60
- 33% ROSC, 15.9% discharged from hospital

Presenting rhythm

- 32 (50.8%) VF
- 23 (36.5%) asystole
- 8 (12.7%) PEA



**Asystole
(22)**

**ROSC
1 (4.5%)**

**No ROSC
21 (95.5%)**

**Survived to
Discharge
0 (0%)**

V.Fib (32)

**ROSC
16 (50%)**

**No ROSC
16 (50%)**

**Survived to
Discharge
9 (28.1%)**

PEA (8)

**ROSC
4 (50%)**

**No ROSC
4 (50%)**

**Survived to
Discharge
1 (12.5%)**



Overall findings – in cardiac arrest:

GP ECG tracing median	11.7 minutes (1-61)
At least one rhythm change	41 (65.1%)
Presented in VF	32 (50.8%)
Developed a shockable rhythm	35 (55.6%)
Median shocks	1
Single shock	9 (42.9% of ROSCs)
Mean period analysis to shock	19.5secs (9-33)
Approximately 1/3 of ROSCs re-arrested in the pre-hospital phase	

During cardiac arrest...

	NonROSC (42)	ROSC (21)		Overall
Duration (median)	12mins (1.3 – 61)	6.5mins (0.9 – 50.2)	P<0.05	11.7 mins

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Rhythm changes	0.95	2.14	P<0.05	1.35
Any change in rhythm	54.8%	90.5%	P<0.005	65.1%



Conclusions

- OHCA – median 1.3 changes in initial phase
- Median changes ROSC > nonROSC
- Non-shockable rhythms change to shockable ones
- ROSC happens quickly – median 6 minutes
- Training issues arise:

basics: CPR and shocks
first 6 minutes of care...
recognising rhythms and changes
post-resus care NB for GPs

The image features a background with a blue-to-black gradient. A white question mark is centered on the page. On the right side, there is a vertical strip of a lighter blue color that tapers towards the top, creating a wedge-like shape. The overall composition is simple and abstract.

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