CONVERSION TO SHOCKABLE RHYTHMS DURING RESUSCITATION AND SURVIVAL FOR OUT-OF HOSPITAL CARDIAC ARREST

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Background & Importance

- Initial shockable rhythm (VF/VT/Unspecified shockable rhythm captured by EMS team)
  - *a significant predictor of survival outcomes after OHCA*
- Minority of OHCA - initial shockable rhythm
- Majority in Asia - initial non-shockable rhythm
  - *May revert to a shockable rhythm after a period of resuscitation*
- The prognostic influence of conversion to shockable rhythms during resuscitation for initially non-shockable rhythms – unclear, conflicting

Aim

- To assess the relationship between initial and subsequent shockable rhythm and post-arrest survival and neurological outcomes after OHCA

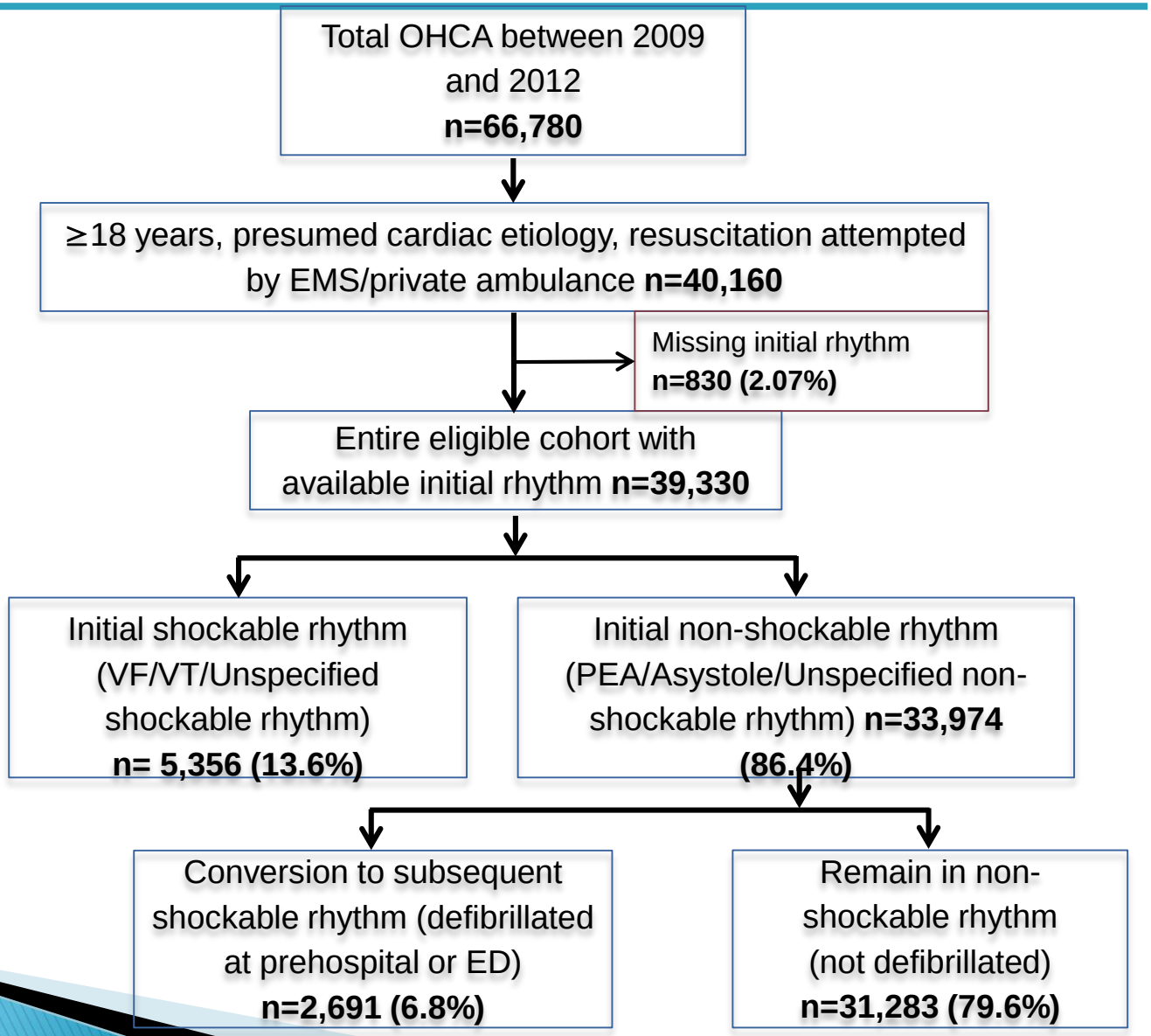
Methodology

- Study design and setting
  - *Retrospective analysis of OHCA reported to PAROS registry (2009-2012)*
  - *7 countries (Japan, Republic of Korea, Malaysia, Singapore, Taiwan, Thailand, UAE*
- Inclusion criteria
  - *Adult OHCA (≥18 years) of presumed cardiac etiology, and had resuscitation attempted by EMS (2009-2012)*

Methodology

- Data analysis
  - *Outcomes =ROSC, Survival-to-admission, Survival-to-discharge, Favorable post-arrest overall and cerebral performance (1/2)*
  - *Univariate and multivariate logistic regression*
  - *2-stage seemingly unrelated bivariate probit model*
  - *Adjusted for the clustering effects of country variance in all models*

Results


Total OHCA between 2009 and 2012 **n=66,780**
≥18 years, presumed cardiac etiology, resuscitation attempted by EMS/private ambulance **n=40,160**
Missing initial rhythm **n=830 (2.07%)**
Entire eligible cohort with available initial rhythm **n=39,330**
Initial shockable rhythm (VF/VT/Unspecified shockable rhythm) **n= 5,356 (13.6%)**
Initial non-shockable rhythm (PEA/Asystole/Unspecified non-shockable rhythm) **n=33,974 (86.4%)**
Conversion to subsequent shockable rhythm (defibrillated at prehospital or ED) **n=2,691 (6.8%)**
Remain in non-shockable rhythm (not defibrillated) **n=31,283 (79.6%)**

Results – Multivariate analysis

Adjusted OR (95% CI)	The entire eligible cohort		Initial non-shockable rhythm subgroup
Reference – Remain in non-shockable rhythm	**Initial shockable rhythm**	**Conversion to subsequent shockable rhythm**	**Conversion to subsequent shockable rhythm**
ROSC at scene or ED	**4.47 (3.31-6.03)***	1.59 (0.56-4.48)	1.57(0.6-4.13)
Survival-to-admission	**3.29 (2.95-3.67)***	**1.53 (1.13-2.08)***	**1.42(1.08-1.87)***
Survival-to-discharge	**6.1 (5.06-7.34)***	**2 (1.1-3.65)***	**1.97(1.14-3.39)***
Good post-arrest cerebral performance	**11.35 (9.21-14)***	**5.12 (3.5-7.48)***	**4.95(3.34-7.33)***
Good post-arrest overall performance	**12.54 (9.15-17.17)***	**5.39 (4.32-6.73)***	**5.08(4.17-6.2)***

Conclusion

- Initial shockable rhythm → the strongest predictor for survival
- Subsequent shockable rhythm → better post-arrest survival and neurological outcomes
- Suggests the importance of early resuscitation efforts even for initially non-shockable rhythms
- Need for post-resuscitation treatment (TTM/PCI/ECMO) for subsequent shockable rhythm

THANK YOU