Airway management in out-of-hospital cardiac arrest: The New Zealand perspective

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Airway adjunct use data was extracted from the St John Out-of-Hospital Cardiac Arrest Registry.

The period studied was 1st Oct 2013 to 30th Sept 2014.

During this 12 month period there was:

- 3884 out-of-hospital cardiac arrests
- 1951 cardiac arrests had resuscitation attempted
New Zealand

Land mass of 271,000km²
Population of ~4.5M*

- St John is NZ’s largest emergency ambulance service
- >600 operational vehicles
- 205 ambulance stations
- Staff 1400 paid, 3000 volunteer
- Serves 90% of population (4.07M)
- Operates across 90% of geographical area

* 30th June 2014 Statistics New Zealand
Airway Adjuncts

- Oropharyngeal airway (OPA)  
  000, 0, 1, 2, 3, 4, 5
- Nasopharyngeal airway (NPA)  
  6.5, 7.5, 8.5mm
- Laryngeal mask airway (LMA)  
  1, 2, 3, 4, 5
- Endotracheal tube (ETT)  
  3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0mm

Waveform capnography mandated when using ETT
Waveform capnography mandated when using ETT
Figure 1. Percentage (and number) of cases using one type of airway adjunct, multiple airway adjuncts, or no airway adjunct during treatment of OHCA.
Percentage of airway adjunct used

Figure 2. Percentage of single airway adjunct use

- **No adjunct** (n=232): 20.3%
- **OPA** (n=338): 29.5%
- **LMA** (n=394): 34.4%
- **ETT** (n=180): 15.7%
Any return of spontaneous circulation prehospital

Figure 3. Rates of any return of spontaneous circulation for each category of airway adjunct.
Survived event (ROSC at hospital)

Figure 4. Rates of event survival (ROSC at hospital handover) for each category of airway adjunct.
Figure 5. Rates of survival to discharge for each category of airway adjunct.
10,691 OHCA: 5591 ETI, 3110 SGA, 1929 no advanced airway

When ETI is compared to SGA

ETI had higher sustained ROSC (OR 1.35; 95%CI 1.19-1.54)
ETI had higher survival to hospital admission (OR 1.36; 95%CI 1.19-1.55)
ETI had higher hospital survival (OR 1.41; 95%CI 1.14-1.76)
ETI had higher hospital discharge neurologically intact (OR 1.44; 95%CI 1.10-1.88)
No Airway adjunct used 20% (n=232)

Figure 6. Proportion of OHCA where no airway adjunct was used that were witnessed by EAS
EAS witnessed OHCA with no airway adjunct

Figure 7. EAS witnessed cardiac arrest (n=79/232) where no airway adjunct was used
Conclusion:

In New Zealand the laryngeal mask airway had the lowest unadjusted rates of:

- Any prehospital ROSC
- Event Survival
- Survival to discharge

When compared to no airway adjunct, oropharyngeal airway and endotracheal tube for treated OHCA

Further analysis is required to adjust for clinical variables and to elucidate statistical significance.