

Flying Doctor Emergency Airway Registry

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RFDS Cairns
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What is FDEAR?

- First ever prospective study of emergency airway management by RFDS in Australia
- Aim is to assess rates of first pass success tracheal intubation, failed intubation and complications
- Began Jan 2007
- Finished Jan 2010 (accepted as Short report in Emergency Medicine Journal)



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Hypothesis?

- RFDS doctors with broad generalist practitioner background can maintain advanced airway skill proficiency despite low intubation rates



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Methodology

- Questionnaires completed by intubator
- ETI indications
- Drugs used
- Airway adjuncts used
- Number of attempts
- Outcomes of intubation
- Patient profile



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RFDS OVERVIEW

RFDS Bases

8 Operational Bases

- **Clinic / Retrieval Base**
 - Cairns (est 1972 relocated from Charters Towers)
 - Charleville (est 1942)
 - Mt Isa (est 1965 relocated from Cloncurry)
 - Townsville (est 1996)
- **Retrieval Only Bases**
 - Brisbane (est 1995)
 - Rockhampton (est 1995)
 - Bundaberg (est 2002)
- **Clinic Only Bases**
 - Longreach (est 2004)



Royal Flying Doctor Service of Australia (Queensland Section)
 Number of Evacuations by Transport Type and Crew Mix
 All RFDS Bases
 1 January 2007 - 31 December 2009

Crew Mix	Primary Evacuations	IHT	Clinic Transport	Repatriation Transport	Total
RFDS Nurse Only	1075	20054	71	259	21459
RFDS Doctor Only	13	31	23	0	67
RFDS Nurse and non RFDS Doctor (not students)	37	3197	0	10	3244
RFDS Doctor and RFDS Nurse	1953	4211	144	52	6360
Total	3078	27493	238	321	31130

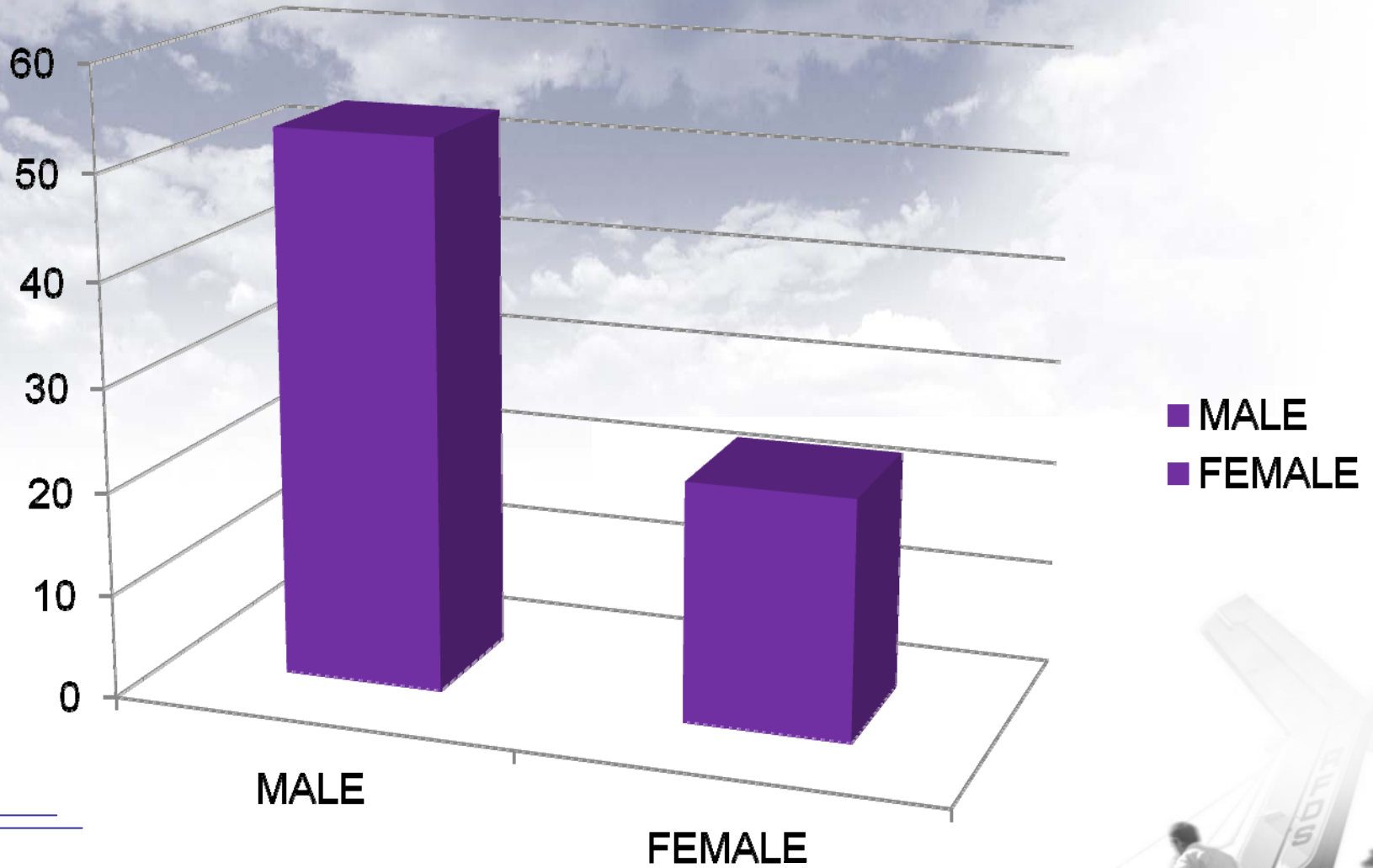


Pooled data analysis Jan 2007-Jan 2010

- Total intubations = 76 (by RFDS MO in retrieval settings)
- First pass success rate = 50(65%)
- Second pass success rate = 22(29%)
- Third pass success rate = 3(4%)
- Total failures = 4 (5%)
- Overall success = 95%
- Max. attempts = 6 (1 case)
- Arrests = 2



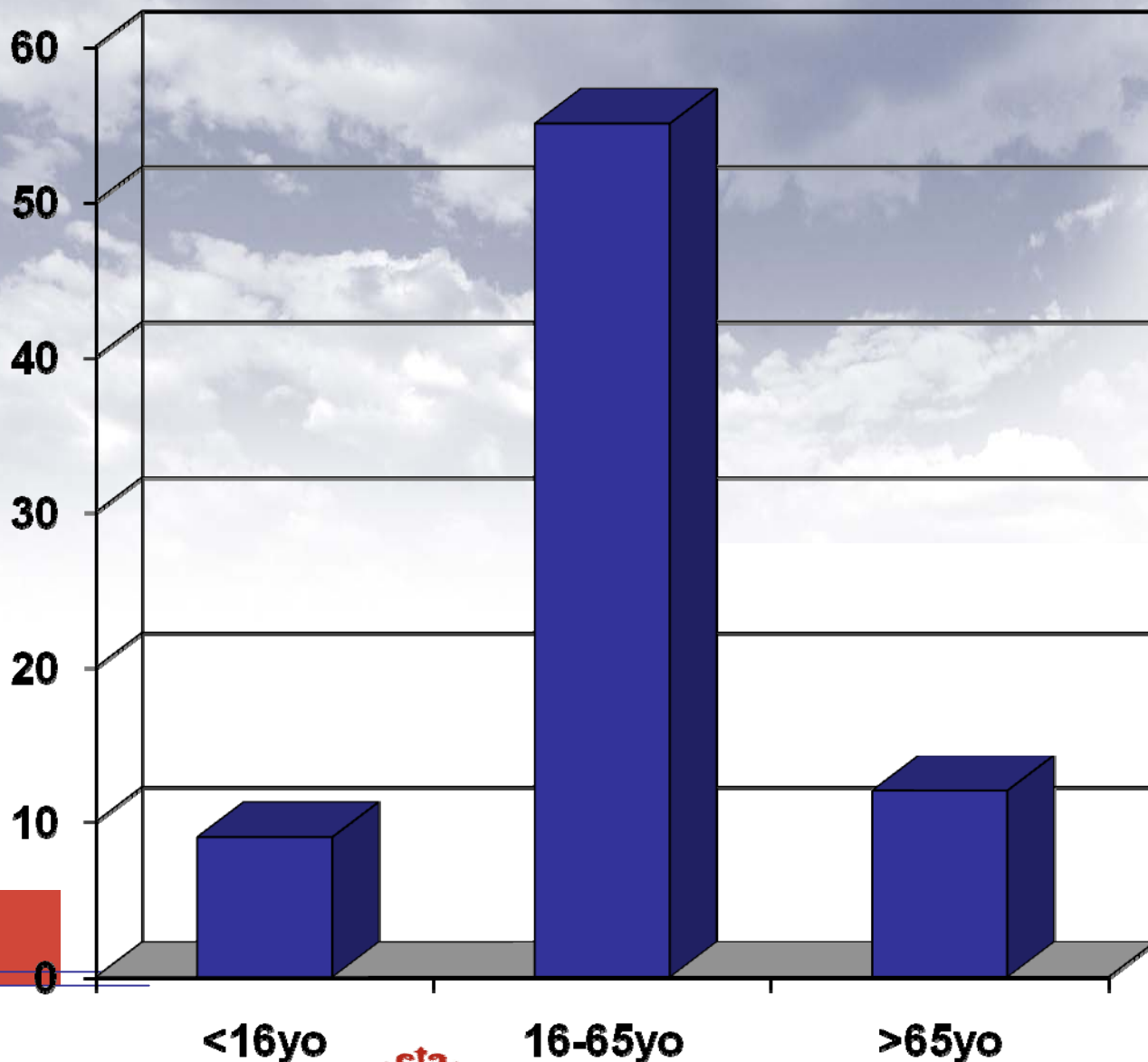
GENDER



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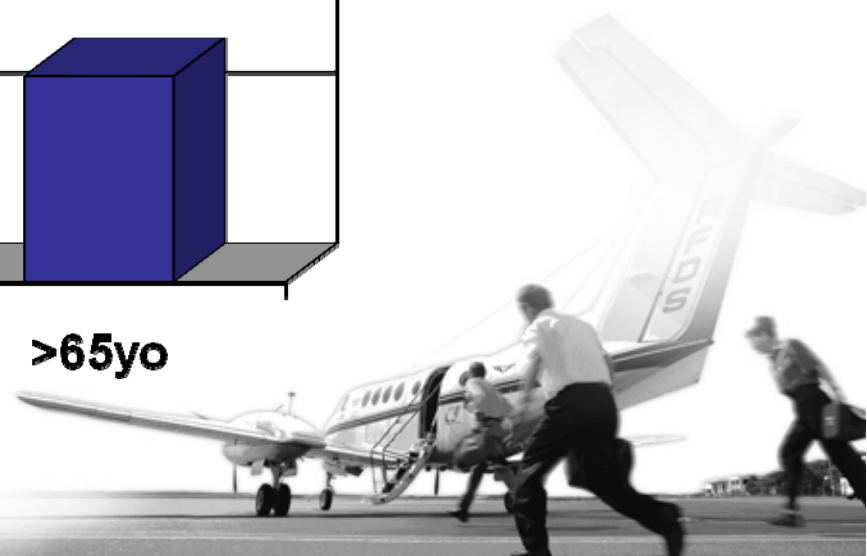


RFDS (QLD SECTION)



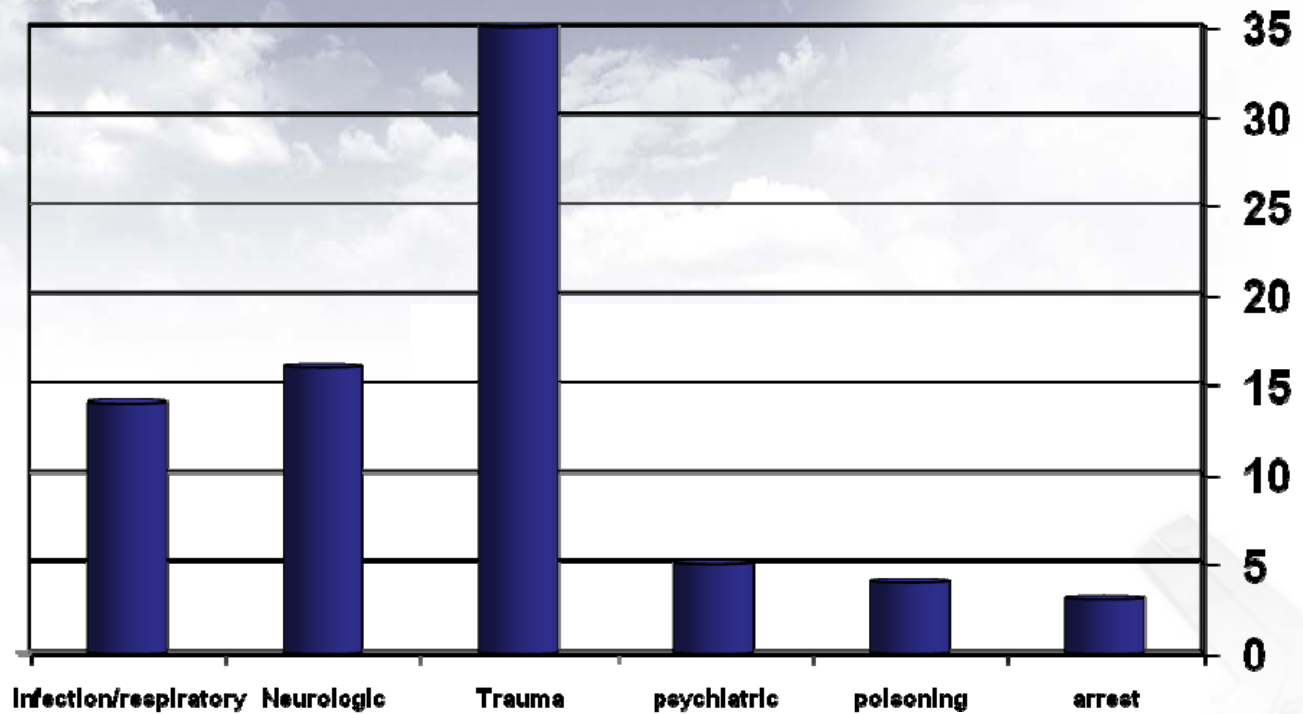
■ age of patient


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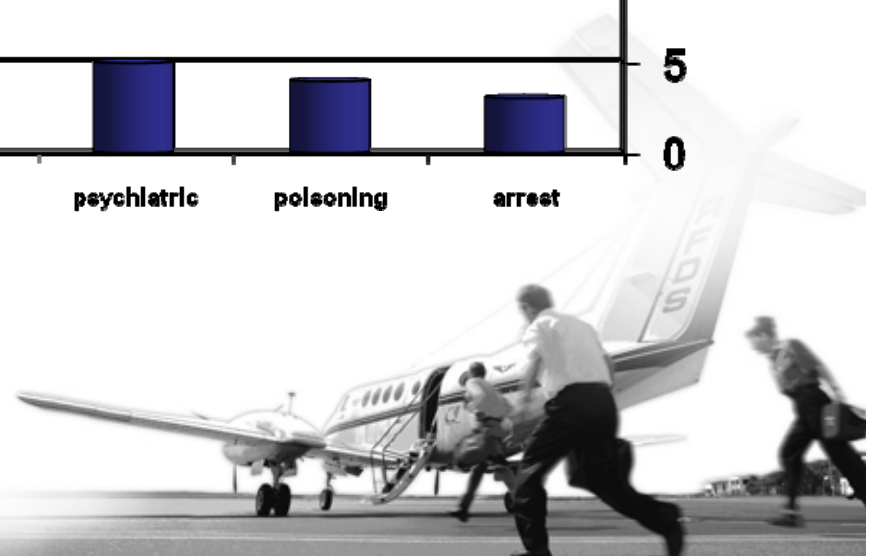


RFDS (QLD SECTION)

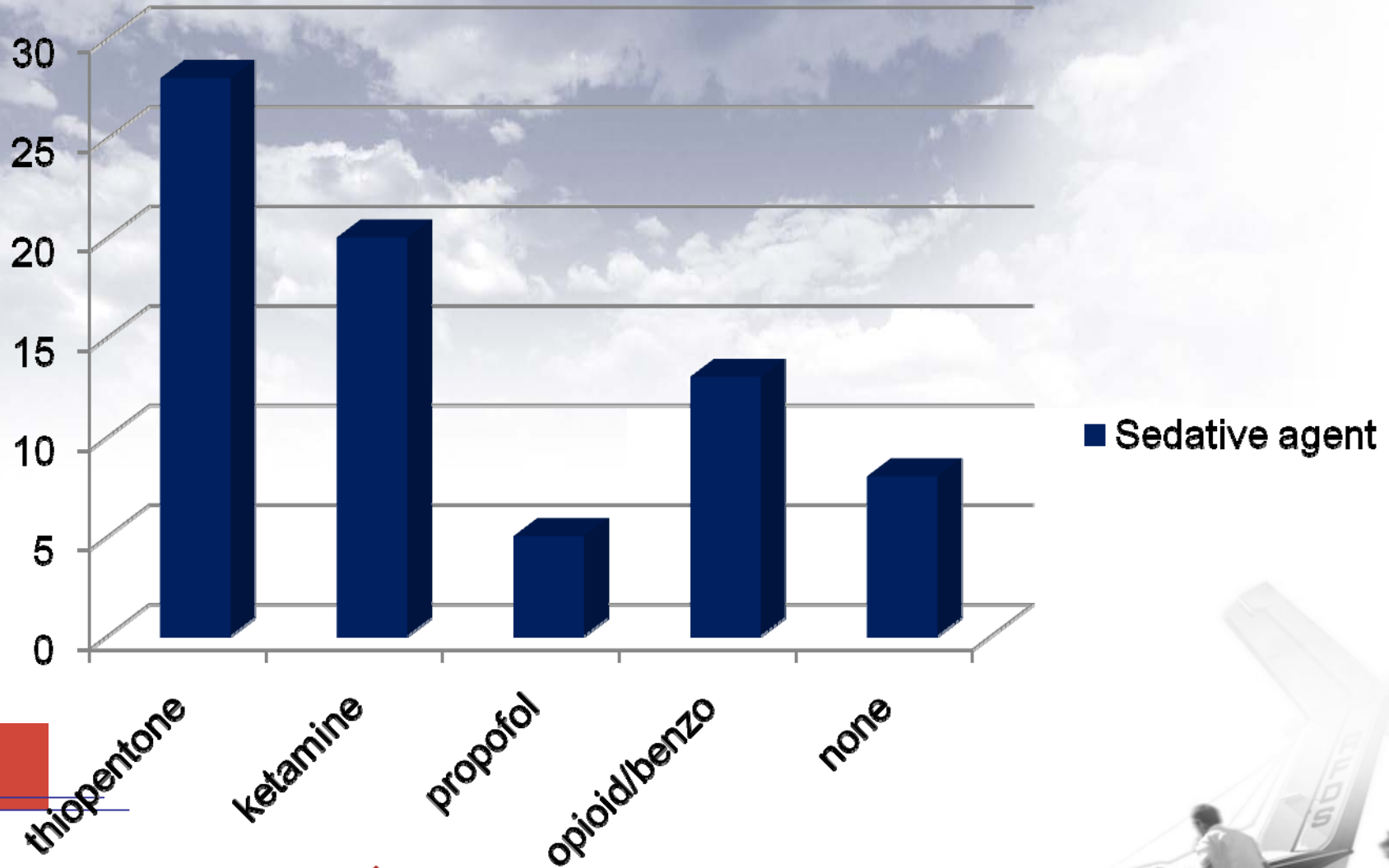
reason for intubation



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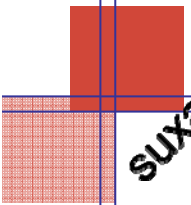
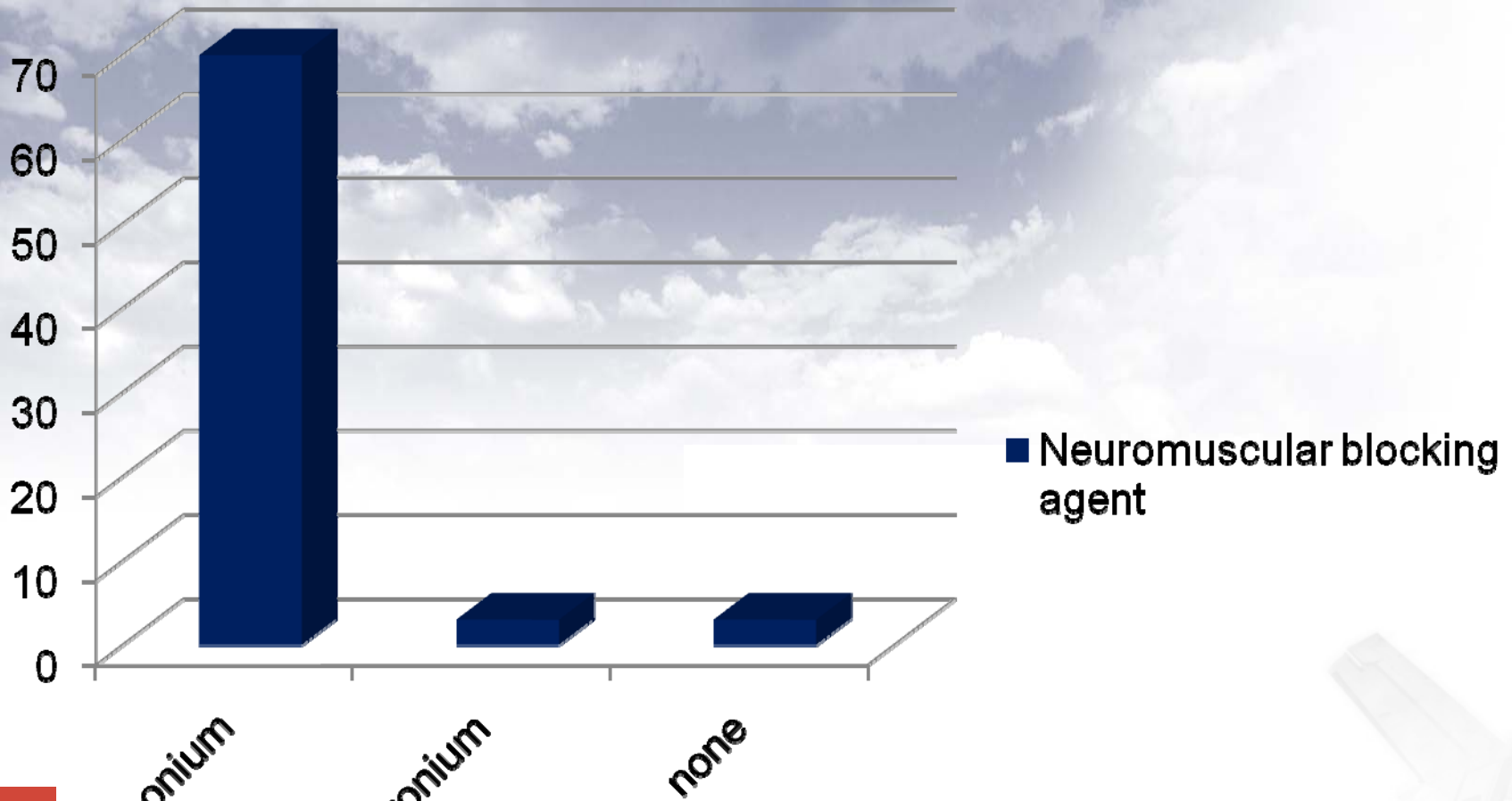
Sedative agent



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Neuromuscular blocking agent



LMA use

- 10 LMA type devices used as rescue devices(after failed intubation attempt)
- 1 x Proseal (successful)
- 3 x Classic LMA (successful x3)
- 6 x Fastrach ILMA (successful x4)



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Cervical spine inline measures and failed intubation

- Inline measures used = 23 cases
- 2 failed intubations in that group (2/23=8.7%)
- 2 failed intubations in the NON inline measures group (53 cases) (2/53=3.8%)

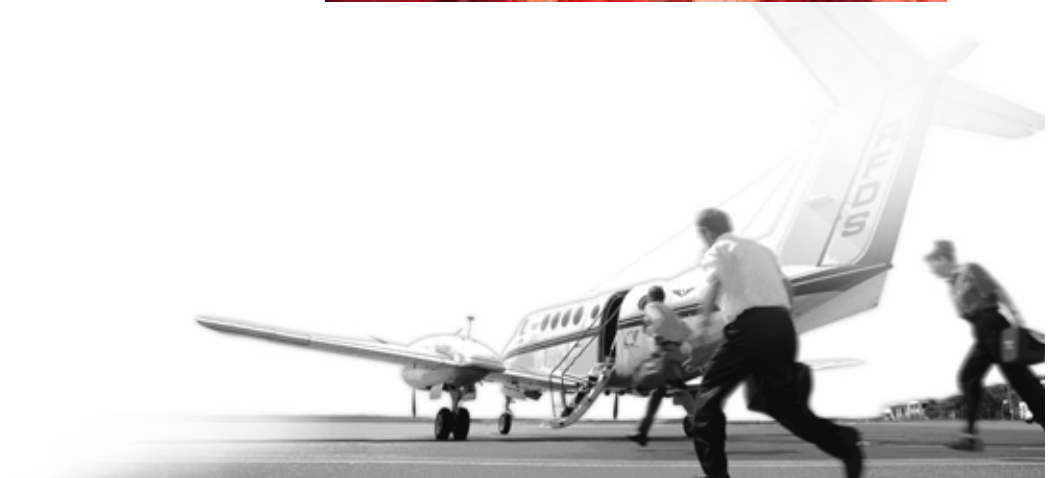


Surgical Airway

- IN this series..Not needed!



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End tidal CO2 use to confirm tube placement

- 81% use
- 1 arrest situation
- 1 not available situation
- Malfunction x2
- Too long to get ready x2
- 9 x just not used



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Grade 4 larynx

- 3 cases
- NO failed intubations
- 2 X Fastrach successful intubation
- 1 x digital intubation success



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Grade 3 larynx

- 16 cases
- Led to 4 cases of failed intubation (2 perintubation arrests)
- 1 case transported with simple airway positioning (BVM rescue then drugs allowed to wear off)
- 1 case transported with LMA airway(Proseal)
- 2 cases transported with LMA (Classic)



Those 2 cardiac arrests...

- BOTH SUCCESSFULLY RESUSCITATED
- 31yo male, cervical spine injury with neurogenic shock and respiratory failure. Failed intubation with asystolic arrest. Rescued and Transported with Classic LMA
- 39yo male, chest stabbing with combativeness post chest drain insertion. Failed intubation with asystolic arrest. Rescued with BVM. Allowed to wake up and transported with simple airway positioning



Okay how do we compare with similar others?



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A prospective observational study of tracheal intubation in an emergency department in a 2300-bed hospital of a developing country in a one-year period

M Wongyingsinn, P Songarj and T Assawinvinijkul

Emerg. Med. J. 2009;26:604-608
doi:10.1136/emj.2008.061192

ABSTRACT

Objective: To assess the competency of physicians in the non-traumatic emergency department (ED) in intubating critically ill patients, to describe the methods, success rates and immediate complications after intubation in Siriraj Hospital.

Method: A one-year prospective observational study of endotracheal intubation in the ED of Siriraj Hospital, which has an annual census of 150 518 patients. Data were collected by each intubator at the time of each intubation for indications, success rates, use of drugs to facilitate intubation and immediate complications of tracheal intubation and the outcomes of patients.

Result: A total of 757 patients underwent endotracheal attempts in the ED, including 176 (23.2%) patients in cardiopulmonary arrest; 754 (99.6%) of these were successfully intubated and 602 (79.5%) patients were successfully intubated at the first attempt. Three patients could not be intubated and underwent surgical airway management. In non-cardiac arrest patients, intubation by neuromuscular blocking agent was performed in 16 (2.75%) patients only, and all the intubators were anaesthesiologists. 396 (68.1%) patients were successfully intubated without using any drug. 285 (37.6%) patients were found to have a total of 341 complications.

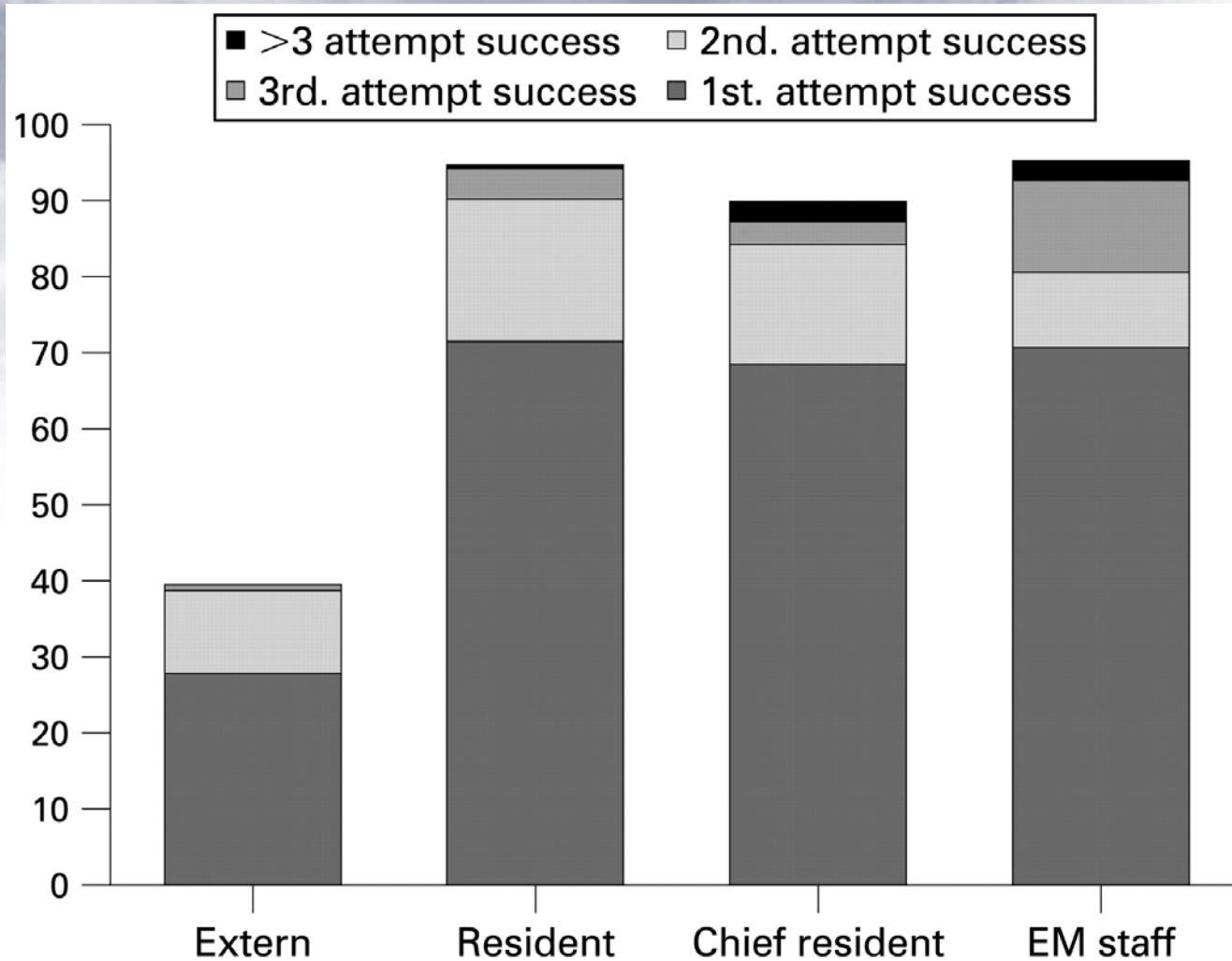
Conclusion: At this institution, the majority of ED intubations were performed by residents and no drug was used. In this ED patients were intubated with a high success rate and a low rate of serious complications.



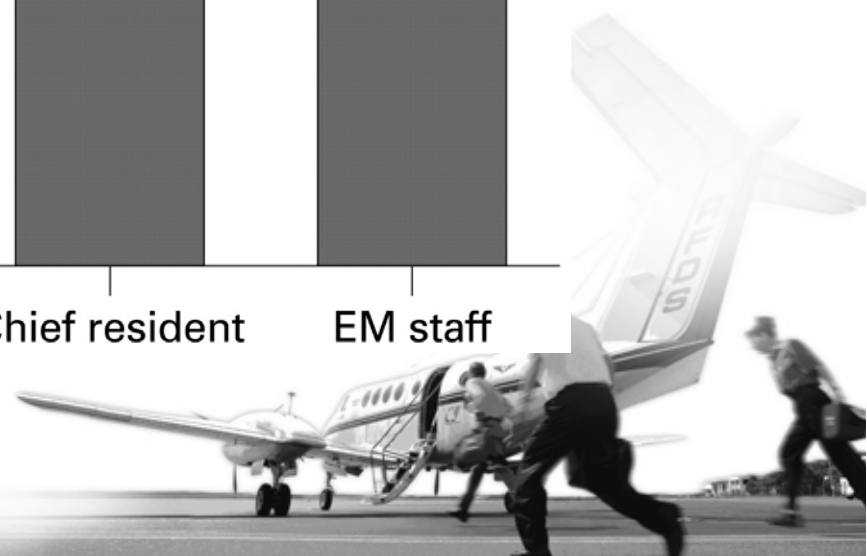
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**Figure 1 Relation between success rates of intubation and status of intubator at each attempt.
 Chief resident, resident 1 and 2; EM staff, emergency medicine attending staff; extern, sixth-year
 medical student; resident, resident 1.**

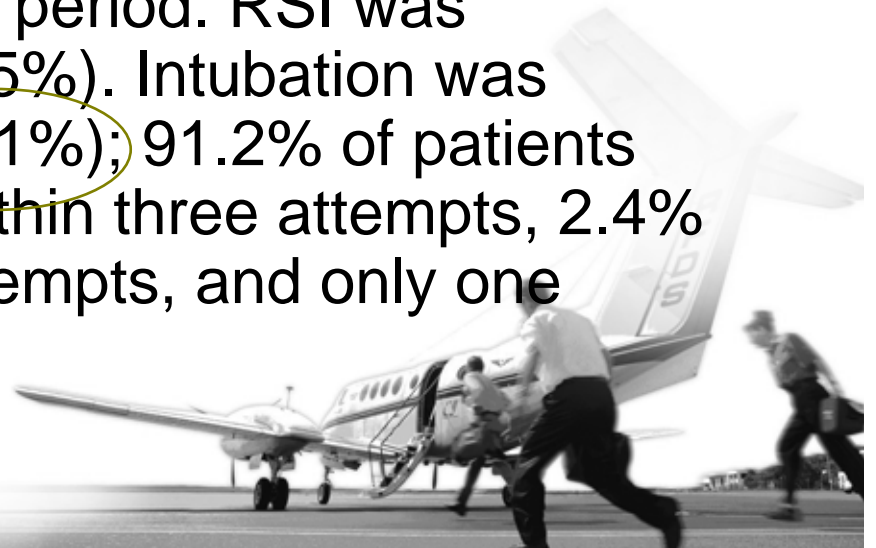


Wongyingsinn, M et al. Emerg Med J 2009;26:604-608



Okay, what about aeromedical setting?

- Germann CA, Baumann MR, Kendall, KM, Strout TD, McGraw K. Performance of endotracheal intubation and rescue techniques by emergency services personnel in an air medical service. *Prehosp Emerg Care* 2009;13:44-9.
- This retrospective study from LifeFlight of Maine looks at 369 intubations over an 8-year period. RSI was performed in 345 patients (93.5%). Intubation was successful in 340 patients (92.1%); 91.2% of patients were successfully intubated within three attempts, 2.4% of the study group had four attempts, and only one patient had five attempts.



Emergency intubation: a prospective multicentre descriptive audit in an Australian helicopter emergency medical service

M Gunning, E O'Loughlin, M Fletcher, J Crilly, M Hooper and D Y Ellis

Emerg. Med. J. 2009;26:65-69
doi:10.1136/emj.2008.059345

ABSTRACT

Objective: To describe the safety profile of emergency airway management when performed by a prehospital team consisting of a doctor and a paramedic. Success rates, the incidence of difficult airways and the ability of prehospital doctors to determine a difficult airway are reported.

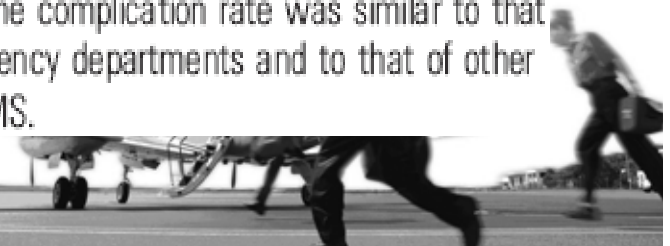
Methods: A prospective audit and descriptive study of three Australian helicopter emergency medical service (HEMS) bases, over a 9-month period. Doctors completed questionnaires regarding the number of endotracheal intubation (ETI) attempts on patients transported intubated and ventilated, Cormack and Lehane view of the cords during laryngoscopy and the anticipated and actual ease of ETI.

Results: A total of 114 (11.4%) patients transported by the HEMS was intubated and ventilated. Study questionnaires were completed on 89 of the 114 cases (78.1%), of which 32 (36%) were trauma related. HEMS were involved with 43 (48.3%) of the 89 intubations and performed 12.4% ($n = 11$) out of hospital. The HEMS ETI success rate was 97.6%. No surgical airways were performed. The actual incidence of difficult airways was higher ($n = 4$, 9.3%) than the anticipated incidence ($n = 1$, 2.3%). Six patients (14.0%) were successfully intubated by the doctor after the paramedic failed.

Conclusions: Well-trained doctor paramedic teams, utilising standardised operating procedures, can safely perform rapid sequence induction and ETI in the prehospital and emergency environment. However, prehospital doctors are not always able to anticipate a difficult airway. The complication rate was similar to that in hospital emergency departments and to that of other physician-led HEMS.



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Okay what does this all mean?



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Positives..

- Our self reported failure rate is low and comparable to similar retrieval services
- Our first pass success rate is also comparable to similar retrieval services
- We seem to be confident using the LMA devices
- No surgical airways were needed



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Negatives..

- Only a small group of RFDS MOs are performing the bulk of intubations. A significant number have not intubated on retrieval in >18months
- Our first pass success rate could be better
- There were 2 arrests related to the intubation attempt
- **Almost 20% non use of ETCO₂, fail to meet international standards of safety**



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Conclusions

- Despite a low rate of endotracheal intubation, Queensland Royal Flying Doctor Service aeromedical teams report a high success rate of this intervention that is similar to other aeromedical organisations' published airway data.
- This study demonstrates the utility of the Laryngeal Mask Airway device in the retrieval and transport setting, in particular for managing a failed intubation



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