

# The Sutherland Emergency Department Airway Corner Newsletter October 2019

	October			Δ September		
Number of intubations	6			4		
Indications	Trauma		Medical:	Trauma		Medical:
	0		ICH/Stroke: 0 Overdose/Ingestion: 0 Sepsis/Resp Failure: 2 Cardiac Failure: 1 Arrest: 2 Other: 1	0		ICH/Stroke: 0 Overdose/Ingestion: 0 Sepsis/Resp Failure: 2 Cardiac Failure: 0 Arrest: 0 Other: 2
Team-leader	FACEM	AT	Other	FACEM	AT	Other
	4	1	1	2	2	0
Intubator	FACEM	AT	Other	FACEM	AT	Other
	1	3	2	1	2	1

Airway ax performed	Yes 3 / No 3			Yes 4 / No 0		
Checklist utilisation	Yes 5 / No 1			Yes 4 / No 0		
ApOx used	Yes 5 / No 1			Yes 3 / No 1		
Induction rx	Ketamine	Propofol	Other	Ketamine	Propofol	Other
	2	1	1	4	0	0
Paralytic rx	Rocuronium		Suxamethonium	Rocuronium		Suxamethonium
	3		1	3		1
Laryngoscope	Direct		Video	Direct		Video
	1		5	0		4
First pass success rate	83%			100%		

Intubation manoeuvres	Nil	NPA/OPA	BVM	LMA	Repositioned	Cric	Nil	NPA/OPA	BVM	LMA	Repositioned	Cric
		0	0	1	1	1	0	0	0	0	0	0
Desaturation	1						None					
Hypotension	None						None					
Equipment Failure	None						None					
Aspiration	None						None					
Oesophageal intubation	1						None					
Mainstem intubation	None						None					
Laryngospasm	None						None					
Drug error	None						None					
Airway trauma	None						None					
Cardiac arrest	None						None					

## Case Observations

Optimal airway management during CPR pre-hospital remains a little controversial following recent RCTs out of the US and UK<sup>1,2</sup>. We would like to remind you that sliding the tube between the cords is not the main focus during CPR. Your goals are cardiocerebral resuscitation, airway management and identifying a likely cause of arrest then treating it if possible. With the airway in mind you want to choose a management strategy suited to your patient and resources, so if you are on a night shift with limited staff then a two person BVM is sub-optimal due to your resources. An LMA is so far as we know not inferior to ETT in terms of mortality (at least pre-hospital).

However, sometimes you're up against it BVM isn't working, LMA is leaking or there's exorcist style vomit fountaining out of the mouth. Intubating with chest compressions in progress is difficult because it generates a moving target, also it gets crowded on the chest when you are manoeuvring the laryngoscope handle. Remember as with all things airway, position is paramount. The good thing about the LUCAS is now you can put the patient a little head up using the bed controls and the device remains relatively stationary, and (at least in pigs) head up CPR leads to better survival<sup>3</sup>.

**Here's a deal:** you don't get as much time as you want, you get the 10s or less "pulse check" time window because you are undertaking cardiocerebral resuscitation aim for minimal interruptions and optimal CPP.

**Be prepared:** there will be vomit/secretions, there will be stuff in the way, you may take more than one bite at the apple.

**For the vomit:** double suction and suction assisted laryngoscopy

**For the stuff:** use the short handle laryngoscope or get an assistant to lift the head up off the bed (changing the angle of attack)

**For the time pressure:** try it in steps. Have a look and place the bougie in one pulse check then come out and deliver oxygen via BVM or the Rapi-Fit adapter from Cook (top drawer airway trolley) and load the ETT to the end of the bougie and use the next pulse check to deliver the tube.

We hope you find this useful for the next adrenaline dump arrest airway situation.



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<sup>1</sup> Wang HE, Schmicker RH, Daya MR, et al. *Effect of a Strategy of Initial Laryngeal Tube Insertion vs Endotracheal Intubation on 72-Hour Survival in Adults With Out-of-Hospital Cardiac Arrest: A Randomized Clinical Trial.* JAMA. 2018; 320(8):769-778. PMID: [[30167699](#)]

<sup>2</sup> Bengier JR, Kirby K, Black S, et al. *Effect of a Strategy of a Supraglottic Airway Device vs Tracheal Intubation During Out-of-Hospital Cardiac Arrest on Functional Outcome: The AIRWAYS-2 Randomized Clinical Trial.* JAMA. 2018; 320(8):779-791

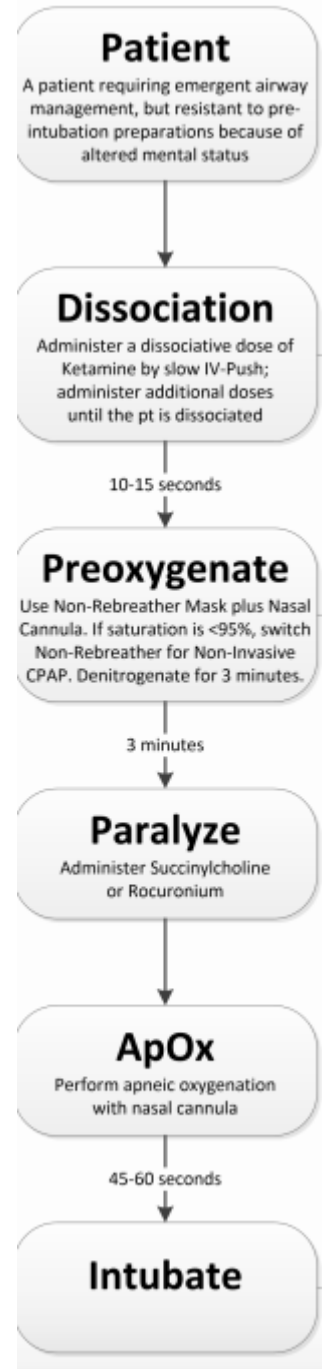
<sup>3</sup> Putzer G, Braun P, Martini J, et al. *Effects of head-up vs. supine CPR on cerebral oxygenation and cerebral metabolism—A prospective, randomized porcine study.* Resuscitation. 2018;128:51–55

# Scenario of the Month: Delayed Sequence Intubation

Delayed Sequence Intubation (DSI) refers to the provision of procedural sedation to provide adequate preoxygenation in preparation for intubation. This technique is typically done on uncooperative patients with conditions such as delirium, intoxication or head trauma in whom it is difficult to preoxygenate, because they may be uncooperative with attempts at preoxygenation. The optimal medication used in order to facilitate this is ketamine as it allows for the continuation of spontaneous breathing and retention of airway reflexes.

## Procedure

- Start procedure with standard airway management protocol – including completing airway checklist
- Have equipment at bedside for preoxygenation technique and discuss plan with team – eg. Non-rebreather mask + nasal cannula, BVM with PEEP valve or CPAP
- Sit patient with head up to 30 degrees on high flow oxygen
- Dissociate the patient using ketamine at an initial dose of 1 mg/kg IV given over 15-30 seconds. Give additional aliquots of 0.5 mg/kg if required
- Preoxygenate the patient using NRB – if unsuccessful at increasing oxygenation saturations, switch to BVM with PEEP or CPAP
- Wait 3 minutes for maximal denitrogenation and oxygenation
- Administer paralytic agent of choice and intubate the patient



## Word on the Street

**The bottom line:** This is Scott Weingart's classic article which introduced the technique of delayed sequence intubation. This study was a prospective observational study that looked at 64 patients whose medical condition led them to not be able to tolerate preoxygenation with traditional methods. In this study DSI was preformed and the pre-intubation SpO<sub>2</sub> improved from 89.9% to 98.8% and a further 2 patients avoided intubation altogether. None of the patients in this study suffered any complications in this trial. Although further studies in this area would be beneficial, this study clearly demonstrated the safety and efficacy of the DSI technique.

### AIRWAY/ORIGINAL RESEARCH

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## Delayed Sequence Intubation: A Prospective Observational Study

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**Study objective:** We investigate a new technique for the emergency airway management of patients with altered mental status preventing adequate preoxygenation.

**Methods:** This was a prospective, observational, multicenter study of patients whose medical condition led them to impede optimal preintubation preparation because of delirium. A convenience sample of emergency department and ICU patients was enrolled. Patients received a dissociative dose of ketamine, allowing preoxygenation with high-flow nonrebreather mask or noninvasive positive pressure ventilation (NIPPV). After preoxygenation, patients were paralyzed and intubated. The primary outcome of this study was the difference in oxygen saturations after maximal attempts at preoxygenation before delayed sequence intubation compared with saturations just before intubation. Predetermined secondary outcomes and complications were also assessed.

**Results:** A total of 62 patients were enrolled: 19 patients required delayed sequence intubation to allow nonrebreather mask, 39 patients required it to allow NIPPV, and 4 patients required it for nasogastric tube placement. Saturations increased from a mean of 89.9% before delayed sequence intubation to 98.8% afterward, with an increase of 8.9% (95% confidence interval 6.4% to 10.9%). Thirty-two patients were in a predetermined group with high potential for critical desaturation (pre-delayed sequence intubation saturations  $\leq$  93%). All of these patients increased their saturations post-delayed sequence intubation; 29 (91%) of these patients increased their post-delayed sequence intubation saturations to greater than 93%. No complications were observed in the patients receiving delayed sequence intubation.

**Conclusion:** Delayed sequence intubation could offer an alternative to rapid sequence intubation in patients requiring emergency airway management who will not tolerate preoxygenation or peri-intubation procedures. It is essentially procedural sedation, with the procedure being preoxygenation. Delayed sequence intubation seems safe and effective for use in emergency airway management. [Ann Emerg Med. 2015;65:349-355.]

Please see page 350 for the Editor's Capsule Summary of this article.