

The Sutherland Emergency Department Airway Corner Newsletter

Mar & Apr 2020

	Mar			Apr		
Number of intubations	3			10		
Indications	Trauma		Medical:	Trauma		Medical:
	0		ICH/Stroke: 0 Overdose/Ingestion: 0 Sepsis/Resp Failure: 0 Cardiac Failure: 0 Arrest: 2 Other: 1	0		ICH/Stroke: 2 Overdose/Ingestion: 1 Sepsis/Resp Failure: 1 Cardiac Failure: 0 Arrest: 0 Other: 7
Team-leader	FACEM	AT	Other	FACEM	AT	Other
	3	0	0	9	1	0
Intubator	FACEM	AT	Other	FACEM	AT	Other
	2	1	0	2	3	5 (Covid team)

Airway ax performed	Yes 2 / No 1			Yes 6 / No 4		
Checklist utilisation	Yes 2 / No 1			Yes 7 / No 3		
ApOx used	Yes 2 / No 1			Yes 6 / No 4		
Induction rx	Ketamine	Propofol	Other	Ketamine	Propofol	Other
	1	0	1	4	4	0
Paralytic rx	Rocuronium		Suxamethonium	Rocuronium		Suxamethonium
	1		1	5		4
Laryngoscope	Direct		Video	Direct		Video
	0		3	0		10
First pass success rate	100%			80%		


Intubation manoeuvres	Nil	NPA/OPA	BVM	LMA	Repositioned	Cric	Nil	NPA/OPA	BVM	LMA	Repositioned	Cric
		0	0	0	0	0	0	0	0	1	1	0
Desaturation	None						2					
Hypotension	None						1					
Equipment Failure	None						None					
Aspiration	None						None					
Oesophageal intubation	None						None					
Mainstem intubation	None						None					
Laryngospasm	None						None					
Drug error	None						None					
Airway trauma	None						None					
Cardiac arrest	None						None					

Case Observations

Overall April was a busier than average month in terms of intubations in the ED. Throughout April we had the COVID intubation team available and they participated in 5 of the 10 intubations within the emergency department. Now that their service is no longer available it is even more essential that we continue to practice the intubation sequence and be familiar with the COVID Airway Checklist.


Areas to focus during practice on that are potentially high risk

- Taking time to your PPE on – make sure you have a well-fitting N95 mask, surgical gown, and eye protection, headwear that is buddy checked
- Ensuring oxygen is turned off at the wall every time the face mask is removed
- Ensuring the team is briefed as to the sequence post laryngoscopy – eg. direct to BVM or vent
- Careful bougie control
- Doffing PPE after intubation sequence – take your time, have a spotter
- Ensuring all connections are tight in the circuit (push and twist)



TSHD INTUBATION AIRWAY CHECKLIST

COVID-19 Edition



PREPARATION <small>OUTSIDE ROOM</small>	EQUIPMENT <small>OUTSIDE ROOM</small>	KEY CHECKS	PROCEDURE <small>INSIDE ROOM</small>	POST PROCEDURE
<p>ROLE ALLOCATION</p> <ul style="list-style-type: none"> <input type="checkbox"/> Team Leader <input type="checkbox"/> 3 Staff in room <ul style="list-style-type: none"> <input type="checkbox"/> Intubator (most experienced) <input type="checkbox"/> Assistant <input type="checkbox"/> Drugs and Scribe <input type="checkbox"/> Runner standby (outside) <div style="border: 1px solid red; border-radius: 15px; padding: 5px; margin-top: 10px;"> <p>PPE - COVID</p> <ul style="list-style-type: none"> <input type="checkbox"/> Wash hands for 30s <input type="checkbox"/> Headwear <input type="checkbox"/> N95 Mask – seal check <input type="checkbox"/> Eye protection <input type="checkbox"/> Long sleeve gown <input type="checkbox"/> Double Glove <input type="checkbox"/> Buddy Check </div> <p>LOCATION</p> <ul style="list-style-type: none"> <input type="checkbox"/> Resus 4/Room 23 <p>PATIENT</p> <ul style="list-style-type: none"> <input type="checkbox"/> Weight <input type="checkbox"/> Allergies <input type="checkbox"/> Difficult intubation anticipated? Call anaesthetics *8009 	<p>AIRWAY TROLLEY</p> <ul style="list-style-type: none"> <input type="checkbox"/> CMAC w/ disposable blade <input type="checkbox"/> In-line suction <input type="checkbox"/> Guedel <input type="checkbox"/> NPA <input type="checkbox"/> Bougie/stylet <input type="checkbox"/> ETT x2 <input type="checkbox"/> Lube <input type="checkbox"/> LMA – second generation <input type="checkbox"/> CO2 Module <input type="checkbox"/> HME filter <input type="checkbox"/> BVM <input type="checkbox"/> Cricothyroidotomy Kit <input type="checkbox"/> 10mL syringe <input type="checkbox"/> Tube tie/tape <input type="checkbox"/> Gauze x3 <input type="checkbox"/> Bluey x3 <input type="checkbox"/> Ventilator <input type="checkbox"/> Paeds intubation: Broselow tape and equipment <p>DRUGS & DOSE</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ketamine/other <input type="checkbox"/> Rocuronium/Suxamethonium <input type="checkbox"/> Vasopressor <input type="checkbox"/> Post intubation sedation <p>ACCESS</p> <ul style="list-style-type: none"> <input type="checkbox"/> IVC x2 <input type="checkbox"/> Fluid primed on pump set 	<p>VERBALISE AIRWAY PLAN</p> <p>VERBALISE PLAN B/C/D</p> <ul style="list-style-type: none"> • B: 2nd Gen LMA • C: 2-handed 2-person BMV • D: Front of neck access <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; margin-top: 10px;"> <p>KEY COVID CHECKS</p> <ul style="list-style-type: none"> • O₂ requirement >6L/min triggers intubation planning • HME filter and in-line suction in the circuit • Avoid HFNP/NIV • Avoid apnoeic oxygenation • Avoid bagging during apnoea. 2-handed 2-person BMV if profound hypoxaemia. • Gas flow switched off prior to removal of masks • Preload bougie/stylet • Use gauze to filter secretions from bougie/stylet removal • Inflate cuff prior to ventilation • Place directly onto ventilator if practical </div>	<p>EQUIPMENT</p> <ul style="list-style-type: none"> <input type="checkbox"/> Move airway trolley, equipment and ventilator into room <p>PATIENT</p> <ul style="list-style-type: none"> <input type="checkbox"/> Airway assessment <input type="checkbox"/> Position optimized <input type="checkbox"/> IV access: flushing <input type="checkbox"/> Haemodynamics optimised <input type="checkbox"/> Preoxygenation <ul style="list-style-type: none"> • 3-5 minutes • 2 hand tight mask seal at 15L/min • Aim SpO₂ >95% <input type="checkbox"/> Prepare ventilator settings – lung protective strategy <ul style="list-style-type: none"> • Low TV 6mL/kg • High RR • Maximise PEEP <input type="checkbox"/> Monitoring <ul style="list-style-type: none"> <input type="checkbox"/> SpO₂ <input type="checkbox"/> ET/CO₂ <input type="checkbox"/> BP – 3 min cycle <input type="checkbox"/> ECG <input type="checkbox"/> Induction <ul style="list-style-type: none"> <input type="checkbox"/> Administration Time _____ <input type="checkbox"/> Laryngoscopy (VL) 	<ul style="list-style-type: none"> <input type="checkbox"/> Check waveform capnography <input type="checkbox"/> Check HME filter is in circuit and its connections <input type="checkbox"/> Clamp ETT before each disconnection <input type="checkbox"/> Optimise ventilator settings <input type="checkbox"/> Start sedation <input type="checkbox"/> NGT <input type="checkbox"/> Careful equipment disposal (Wrap in bluey) <input type="checkbox"/> Decontamination of reusables <div style="border: 1px solid red; border-radius: 15px; padding: 5px; margin-top: 10px;"> <p>Remove PPE - COVID</p> <ul style="list-style-type: none"> • Gloves • Eye protection • Gown • Mask • Hand Hygiene after the removal of each item • Buddy check during removal </div> <ul style="list-style-type: none"> <input type="checkbox"/> Transfer plan

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Know Your Equipment: Lung Protective Ventilation

Lung protective ventilation strategies are the standard of care in mechanical ventilation. It has been shown to decrease ventilator induced lung injury in ARDS patients. This is done by reducing volutrauma (hyperinflation), barotrauma (alveolar rupture/pneumothorax) and release of inflammatory mediators. Recently, there has been increasing evidence that this strategy can be beneficial in patients without ARDS as all mechanically ventilated patients are at risk of lung injury.

There remains controversy on the optimal ventilation strategies for COVID-19 patients. Initially in the disease course the lungs are thought to be relatively compliant and the ARDS type ventilation strategy may not be appropriate as high PEEP may result in haemodynamic compromise. These patients benefit from high FiO₂ and a lower PEEP strategy. As the disease progresses to a more ARDS type physiology the ARDSnet ventilation and lung protective ventilation strategies are thought to be more appropriate.

Goals of Lung Protective ventilation strategy:

- *Low tidal volume (4-8 mL/kg of predicted body weight)*
 - Want to avoid overinflating good lung and causing injury
- *Limit Plateau Pressure (< 30 cm H₂O)*
 - Want to avoid barotrauma by minimising alveolar distending pressure
- *Optimise PEEP*
 - PEEP is protective – avoids alveolar collapse during expiration and maximises the surface area for gas exchange

ARDSnet Ventilation protocol:

- Calculate predicted body weight
 - Males - $50 + 0.91 (\text{Height in cm} - 152)$
 - Female - $45 + 0.9 (\text{Height in cm} - 152)$
- Start initial TV of 6 – 8 mL/kg
- Start initial RR to approximate minute ventilation – approx. 20 to 25
- Aim for SpO₂ of 88-95% - increase PEEP and FiO₂ in incremental fashion to achieve goal:

FiO₂	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7
PEEP	5	5	8	8	10	10	10	12

FiO₂	0.7	0.8	0.9	0.9	0.9	1.0
PEEP	14	14	14	16	18	18-24

- Check pH – aim for 7.30 to 7.45
 - If pH < 7.3 increase RR until within limits
- Measure Plateau Pressure:
 - Easy to measure on the Oxylog – hit and hold down the inspiratory hold button
 - Want to limit the plateau pressure < 30 mmHg
 - Higher plateau pressures can lead to barotrauma
 - If plateau pressure > 30 – decrease VT by 1mL/kg


http://www.ardsnet.org/files/ventilator_protocol_2008-07.pdf

Word on the Street

The bottom line:

This article provides a clear summary of the guiding principles for airway management in patients with COVID-19. Included are descriptions of room setup, intubation equipment, team composition and intubation sequence and accompanying cognitive aids. The concepts used from this are the basis of airway management at Sutherland ED aiming for safe intubation practice with minimal risk to those involved.

Consensus statement: Safe Airway Society principles of airway management and tracheal intubation specific to the COVID-19 adult patient group

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Abstract

Introduction: This statement was planned on 11 March 2020 to provide clinical guidance and aid staff preparation for the coronavirus disease 2019 (COVID-19) pandemic in Australia and New Zealand. It has been widely endorsed by relevant specialty colleges and societies.

Main recommendations:

- Generic guidelines exist for the intubation of different patient groups, as do resources to facilitate airway rescue and transition to the “can’t intubate, can’t oxygenate” scenario. They should be followed where they do not contradict our specific recommendations for the COVID-19 patient group.
- Consideration should be given to using a checklist that has been specifically modified for the COVID-19 patient group.
- Early intubation should be considered to prevent the additional risk to staff of emergency intubation and to avoid prolonged use of high flow nasal oxygen or non-invasive ventilation.
- Significant institutional preparation is required to optimise staff and patient safety in preparing for the airway management of the COVID-19 patient group.
- The principles for airway management should be the same for all patients with COVID-19 (asymptomatic, mild or critically unwell).
- Safe, simple, familiar, reliable and robust practices should be adopted for all episodes of airway management for patients with COVID-19.

Changes in management as a result of this statement: Airway clinicians in Australia and New Zealand should now already be involved in regular intensive training for the airway management of the COVID-19 patient group. This training should focus on the principles of early intervention, meticulous planning, vigilant infection control, efficient processes, clear communication and standardised practice.