

Prehospital Advanced Airway Management

Does it work?

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Advanced airway management

- Does it work?
 - can we manage the airway?
 - can we use advanced airway skills?
 - does advanced airway management improve patient outcomes?

The problem



- The difficult and obstructed airway is a common problem

The scope of the problem

- **Auckland district alone**
- **Approx 400 status one patients with obstructed airway per year**
- **Relatively common problem**

The problem

- **Airway obstruction a common prehospital problem**
- **Airway obstruction a particularly difficult problem when combined with trismus**
- **Airway obstruction may worsen secondary injury in patients with brain injuries**
- **Secondary injury increases mortality and morbidity**

Secondary injury

- **We have become increasingly aggressive at targeting secondary injury in the brain injured**
- **We have become more aggressive with interventions to limit secondary injury**
- **But we have made few gains in dealing with the obstructed airway**

Intubation without drugs

- **Intubation without drugs uncommon prehospital**
 - patients need to be very unconscious
- **Intubation without drugs prehospital associated with very high mortality**
- **Sedation alone has been used to try to overcome trismus**
 - significant concern that this approach may worsen secondary injury

What about suxamethonium?

- **Suxamethonium considered by many to be doctor only skill**
 - concerns regarding failed intubation
- **Our failed intubation rate is very low**
- **Increasingly convinced that suxamethonium could be safely and appropriately used by selected advanced care paramedics**

A possible answer to the problem

- Sedation alone was not the answer
- Answer was to take complete control
- Answer was for advanced care officers to have advanced airway skills
- Answer was for advanced airway skills to include use of suxamethonium

Take the bull by the horns

- Feasibility trial of prehospital RSI
- A certain degree of caution
 - we didn't want the treatment to be worse than the disease
- Put together a procedure
- Put together a training package
- Trained a small number of selected officers
- Feasibility trial and review at twelve months

But.....



- When taking
the bull
by the horns.....

Don't.....



- Don't let the
bull get the
upper hand.....

Feasibility trial of prehospital RSI

- **Decided to take the bull by the horns**
- **A certain degree of caution**
 - we didn't want the treatment to be worse than the disease
- **Put together a procedure**
- **Put together a training package**
- **Trained a small number of selected officers**
- **Feasibility trial and review at twelve months**

Everyone wanted to be part of it



Feasibility trial of prehospital RSI

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Patient selection

- **Indications**

- GCS less than or equal to nine and
- difficult obstructed airway and
- more than 15 mins from hospital

- **Contraindications**

- elderly (> 70 yrs) with stroke
- suspected difficult intubation
- paraplegics/quadriplegics
- muscle disorder with long term weakness

Drug selection for RSI

- **Midazolam to attenuate ICP rise**
 - chosen for simplicity
- **Suxamethonium as initial NMB**
 - chosen for speed of onset and offset
 - stored in pouches, pouch in fridge when not on duty
 - lasts at least a month
- **Vecuronium as second NMB**
 - chosen for shelf life

The procedure

- Check inclusion and exclusion criteria
- Midazolam given to attenuate ICP rise
 - 4mg adults and children > 10 years
 - 2mg in children < 10 years
 - none if shocked
- Suxamethonium 1 mg/kg
- Vecuronium .1 mg/kg given post confirmation of ETT placement

Confirmation of ETT placement

- I wanted to introduce capnography
- Capnography unable to be introduced initially because of cost
- EID introduced
- Capnography now being introduced
- Capnography now being used for confirmation of ETT position and for guiding ventilation

Failed intubation drill

- **Failed intubation was our biggest concern**
- **A range of alternative airway devices were considered**
 - laryngeal mask airway (incl disposable)
 - combitube
 - airway management device
- **Decision postponed until national decision made on alternative airway device**

Failed intubation



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RSI data so far

- Ten trained officers
- Twelve months
- 21 patients
 - 12 trauma
 - 3 subarachnoid haemorrhage
 - 4 poisoning
 - 2 asthma
- One failed intubation

RSI data so far

- **Numbers disappointingly low**
- **No inappropriate patients**
- **Many missed patients**
 - no RSI trained officer available
 - officer chose not to do it
- **Numbers are too small to make any firm conclusions**
- **It appears safe to continue with feasibility trial**

RSI now

- **More officers being trained**
- **Focusing on training officers with the ability to get where they are needed**
- **Capnography will be compulsory**
- **Alternative airway device for failed intubation will be introduced**
- **I don't see it becoming part of the standard skills for all**

The future

- **Open mind on the role of pre-hospital RSI by advanced care paramedics**
- **I would like to see data that it improves patient outcomes**
- **Several randomised trials underway**
- **I remain uncertain how many each officer needs to do to maintain competency**
- **Decision making skills more important than mechanical skills**

Summary

- Does prehospital advanced airway management work?
- I think it should reduce secondary injury
- I think reducing secondary injury should improve outcomes
- I await randomised outcome data
- I have an open mind in the meantime



Any questions?