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.....



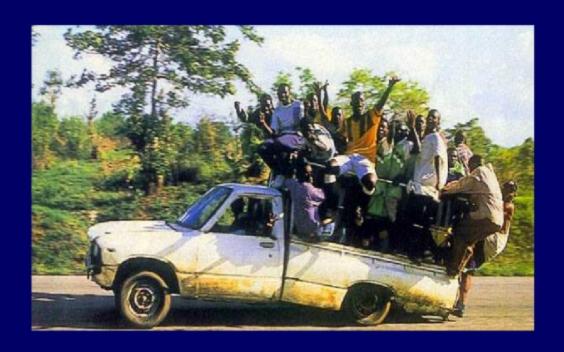
Don't let the
bull get the

upper hand......

Feasibility trial of prehospital RSI

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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</p>
 - none if shocked
- Suxamethonium 1 mg/kg
- Vecuronium .1 mg/kg given post confirmation of ETT placement

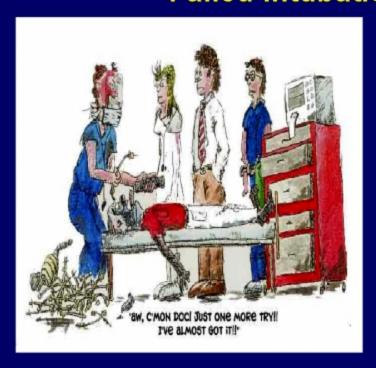
Confirmation of ETT placement

- 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

