

Paramedic - Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: Pre-hospital use of Rapid Sequence Intubation in adults with head injuries.

Report By: Phillip Falcone

2nd Party Appraiser: Jen Greene

Clinical Scenario: You arrive on scene for a 24 y/o M who has been involved in a single motor ATV accident with 2 people on board. Upon assessment of the patient, the Paramedics find him to be a GCS 3, slow/irregular respirations, bradycardia and widening pulse pressure. They manage his airway as best a possible while getting the patient packaged up and loaded into the ambulance. The Paramedic feels he needs to intubate at this time, when he starts assessing the patient's airway, he notices a trismus jaw. The paramedic is unable to correct this matter effectively with any of their current medications, this requires a new intervention.

PICO (Population – Intervention – Comparison – Outcome) Question:

Adult patients with a traumatic brain injury requiring airway management – RSI – Using a non-paralytic – Reduction in mortality.

Search Strategy:

((Rapid Sequence Intubation, RSI)) AND "Brain Injuries, Traumatic"[Mesh] AND ""Emergency Medical Services"[Majr])) AND "Intubation"[Mesh] "Emergency Medical Services"[mh] OR "Emergency Medical Technicians"[mh] OR paramedic*[tiab] OR "emergency medical technician*" [tiab] OR prehospita[tiab] OR pre-hospita[tiab] OR "out of hospital"[tiab] OR responder*[tiab] OR ambulance[tiab]

Search Outcome:

18301



Paramedic - Evidence Based Medicine (P-EBP) Program

Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
Bulger, 2005	3052 patients that were transported by EMS with a TBI	Retrospective study – Level 2	The use of NMBAs (neuromuscular blocking agents) to facilitate prehospital intubation improves outcome for patients with TBI	Mortality of patients intubated with NMBAs was 25% versus 37% for those not receiving NMBAs (p < 0.001)	This study had a random population and a fair number of patients. Level of skill could come into play due all results were from a level 1 trauma centre. Clear results that were effective for reducing mortality rate.
Gunning, 2013	86 patients that required RSI <ul style="list-style-type: none"> o Most common indication was traumatic brain injury. 	Retrospective observational study – Level 3	The success of intubation rates following RSI and adverse effects.	0% failed intubations self-reported. 22% of patients experienced an adverse event. Following the 22% of patients that experienced adverse event, 11.6% had hemodynamically instability, 3.5% tension pneumothoraces, 2.3% intubation difficulties, 2.3% low ETCO ₂ , 1.2% high ETCO ₂ , 1.2% episode of bronchospasm.	The limitations on this study were it being a retrospective study design, having a small sample size, and based on self-reporting RSI success subjectively completed by paramedics. This is the first study of the safety and efficacy in RSI for paramedics in South Africa.

Comments:

The gunning study showed that it had a 100% success rate in RSI, however it is important to point out that this was all self-reported by paramedics via patient report documentation.

Paramedic - Evidence Based Medicine (P-EBP) Program

Consider:

Both studies showed favourable results for using RSI in traumatic brain injuries in the prehospital setting. It is important to take into account that the Gunning study had a sample population size of 86 patients and their intubation success rate was determined by self-reporting. The self-reported data could introduce a subjective outcome. Neither study was Canadian nor did it have any Canadian patients.

Clinical Bottom Line:

With the data that was provided I believe it has good evidence to further research or even change our practice with the use of RSI with head injuries that require airway management. Having the tools and medications to facilitate RSI will help better the Paramedic clinician in providing better patient care and increase patient survival rate.

References:

- Bulger, E. M., Copass, M. K., Sabath, D. R., Maier, R. V., & Jurkovich, G. J. (2005, April). The use of neuromuscular blocking agents to facilitate prehospital intubation does not impair outcome after traumatic brain injury. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/15824647?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_Results_Panel.Pubmed_RVDocSum&fbclid=IwAR1qnZ3au5vqKTmg-NIR46zdT7oQhzUpttlxBIzq655LpXiOw6IpsZftw_I.
- Gunning, M., Perkins, Z., Crilly, J., & von, R. (2013, May 14). Paramedic rapid sequence induction (RSI) in a South African emergency medical service: a retrospective observational study. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/?term=24300681>.

