



# Is it Time to RSI?

## A retrospective analysis of the impact that ground ambulance crew interventions make on time to RSI from HEMS crew arrival.

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### INTRODUCTION

In multi-trauma patients and time critical head injuries it is assumed that time to intervention especially rapid sequence induction of anaesthesia (RSI) is associated with improved outcomes. It is likely that for those patients where airway management is indicated the earlier this occurs the more benefit it will be for the patient. Recent guidelines from NICE in the UK suggest that the aim should be to deliver these interventions for those that need them within 45 minutes. In the UK, rapid sequence induction (RSI) of anaesthesia is dependent on the presence of an appropriately trained physician or a HEMS team.

HEMS teams rely on ground ambulance crews to ensure efficient delivery of this critical intervention. Many of these interventions are not reliant on the HEMS team having arrived on scene. Pre-hospital RSI is likely to be delivered in the most efficient way if patients requiring the intervention are recognised early and interventions begun by those who arrive on scene in the earliest phases of resuscitation. This is often for logistical reasons not the HEMS team. Our aim was to understand which interventions, required prior to RSI, if performed by the ground paramedic response influenced the time to RSI for the patient.

### METHODS

This retrospective audit of all multi-trauma or significant head injured patients who underwent an RSI by Kent Surrey Sussex Air Ambulance Trust (KSSAAT) using the information recorded on HEMSBASE between 1/7/2015 and 30/6/2016. Using this information including review of free text descriptions we audited interventions undertaken by both HEMS and the local ambulance service prior to HEMS arrival.

The selection of three interventions that are required prior to RSI or potentially might prevent the need for RSI were selected from the range of interventions that are provided at scene. A previous audit of scene times for all patients had identified that there was a time cost if the HEMS crew performed these interventions. The interventions selected for further analysis were; intravenous access, packaging and full patient exposure as these appeared to have the greatest impact on scene time in the earlier audit.

### RESULTS

During the study period there were a total of 201 RSI anaesthetics provided by KSSAAT. 42 cases were excluded, 9 of these were due to incomplete data. Data for those patients where there was prolonged extrication (15), multiple casualty scenes (11) and where RSI was performed for no trauma reasons (7). It was felt that these factors would have significant confounders, not associated with ground ambulance crew interventions, that might affect time to HEMS RSI

### DISCUSSIONS

It was found that if the selected key interventions were carried out by the ground paramedic crew, time from HEMS arrival to RSI was reduced. There is an opportunity for ground ambulance crews to improve the time to RSI with a relatively simple group of interventions. None of these interventions are currently overlooked but encouraging crews to aim for their completion due to the effect that this can have should be emphasised to them. We have grouped the interventions in a way that they are easily memorable and provide to the right a mock up of an education poster to circulate to ground crews. This audit emphasises the importance of the ground crew in enabling enhance care providers to achieve more timely interventions

These interventions were;

**R** – remove clothes

**S** – scoop to skin of patient and package patient with pelvic binder if appropriate

**I** – secure 2 IV cannula

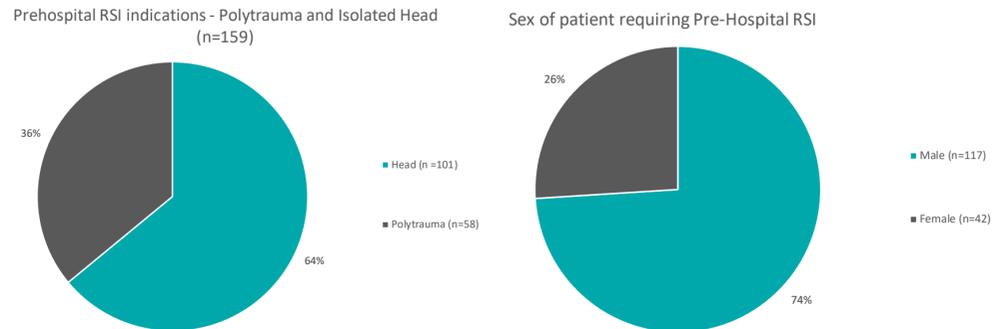
### CONCLUSIONS

This audit shows that ground ambulance crew led interventions can reduce time to RSI in trauma patients. A simple R-S-I pacern of interventions can reduce time from arriving

### REFERENCES

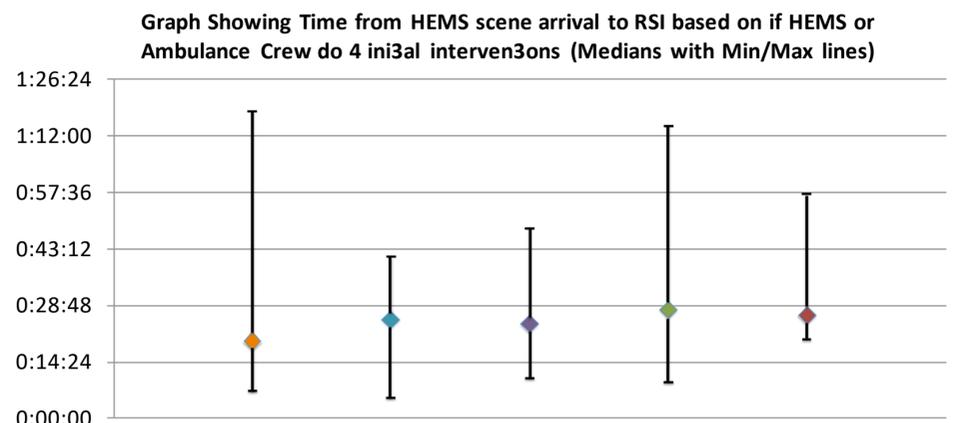
1. National Institute for Health and Care Excellence. Major trauma: assessment and initial management (NICE Guideline 39; Feb 2016) - <https://www.nice.org.uk/guidance/ng39>

### FIGURE 1 – Demographics of RSI patients



There are many interventions that are undertaken by crews on scene. Many of these are not vital prior to RSI. We identified three interventions that have to occur prior to RSI that seem to have an influence on the time to RSI. The three interventions identified are When these have been undertaken by the ground crew then the time to RSI is reduced. The table below shows how the simple act of all of these interventions being completed by non-HEMS personnel reduces the time to RSI for the HEMS team.

### FIGURE 2 & TABLE 1 – Interventions and time from scene arrival to RSI



Intervention	1st IV	Ambulance	Ambulance	Ambulance	Ambulance	HEMS
	2nd IV	Ambulance	Ambulance	Ambulance	HEMS	HEMS
Scoop	Ambulance	Ambulance	HEMS	HEMS	HEMS	
Clothes Off	Ambulance	HEMS	HEMS	HEMS	HEMS	
Times	Median	0:19:30	0:25:00	0:24:00	0:27:30	0:26:00
	Min	0:07:00	0:05:00	0:10:00	0:09:00	0:20:00
	Max	1:18:00	0:41:00	0:48:00	1:14:00	0:57:00

#### Is it time to RSI your patient?

KSSAAT HEMS have shown that interventions done prior to our arrival can considerably improve the time taken on scene. Time to RSI has been promoted as improving patient outcomes in certain groups of patients. It is a guideline from NICE that RSI should be undertaken within 45 mins from the time of the 999 call.

#### Following trauma does your patient meet any of the following?

- Does the patient have actual or impending airway compromise?
- Does the patient have ventilatory failure?
- Are they unconscious?
- Is the Patient unmanageable or severely agitated after head injury?

Follow your normal SOP for these patients & consider requesting HEMS early in the job

Please do the following to reduce Time to RSI - Please do while HEMS are en-route:

- R** – Remove clothes
- S** – Scoop to skin of patient and package patient with pelvic binder if appropriate
- I** – IV cannula x2 (secured)



Figure 3: Prompt Card for use by Ambulance Crews attending jobs