

## Introduction

- Pre-hospital lifesaving interventions (LSIs) and minimising the time to definitive care remain the cornerstones of preventing deaths after trauma.<sup>1</sup> Delays associated with LSIs may be associated with poor outcomes in time-sensitive mass casualty incidents (MCIs).<sup>2</sup>
- Times to perform these interventions have not been clearly defined and are required for MCI modelling and planning.
- Therefore, this pilot study aimed to assess the feasibility of measuring time to perform pre-identified LSIs used during MCIs.

## Methods

- An observational simulation study involving pre-hospital care providers (PHCPs) was conducted at London's Air Ambulance training centre.
- A pre-intervention questionnaire determined participants' backgrounds and real-world LSI experience.
- Participants were asked to perform 16 basic to advanced LSIs (within their professional role) 'in real time'.
- Video-recordings captured the LSI time interval (TT).
- TT was defined as the duration from picking up the equipment/touching the mannequin to the completion of the intervention.
- TT is reported in seconds (median and interquartile range [IQR]).
- The study was approved by Queen Mary University Research Ethics Committee.

## Results

- Seven PHCPs (five paramedics and two physicians) performed a total of 92 LSIs, with paramedics limited to 11 LSIs due to their scope of practice (Table 1) (Figure 1 A-C).
- Physician-only performed LSIs had the longest TT compared to other LSIs (RSI 175 seconds IQR (162.50–187.50), Figure 2).
- The longest TT in all LSIs was related to circulation support, with fluid resuscitation taking 99 seconds IQR (88–101) minutes for paramedics and 80 seconds IQR (74.5–85.5) for physicians (Figure 1.C).
- LSIs with a median time exceeding 30 seconds were generally characterised by a substantial variability, as indicated by a wide interquartile range (IQR) (Figure 1B-C).

Table 1. Participant demographics and LSI performance in the simulation session

Description	Paramedic	Physician	Total
Participants	5 (71.4%)	2 (28.6%)	7 (100%)
Years of Experience	6 IQR(3-8)	7.25 IQR(3.9-10.6)	6 IQR(3-11)
MCI response	0 (0%)	1 (50%)	1 (14.3%)
<b>LSI Type</b>			
Airway Management	12 (60%)	8 (40%)	20 (21.7%)
Breathing Support	12 (60%)	8 (40%)	20 (21.7%)
Circulation Support	36 (69.2%)	16 (30.8)	52 (56.5%)
<b>Total LSI</b>	<b>60 (65.2%)</b>	<b>32 (34.8%)</b>	<b>92 (100%)</b>

Abbreviations: IQR, Interquartile range; LSI, Life-saving intervention

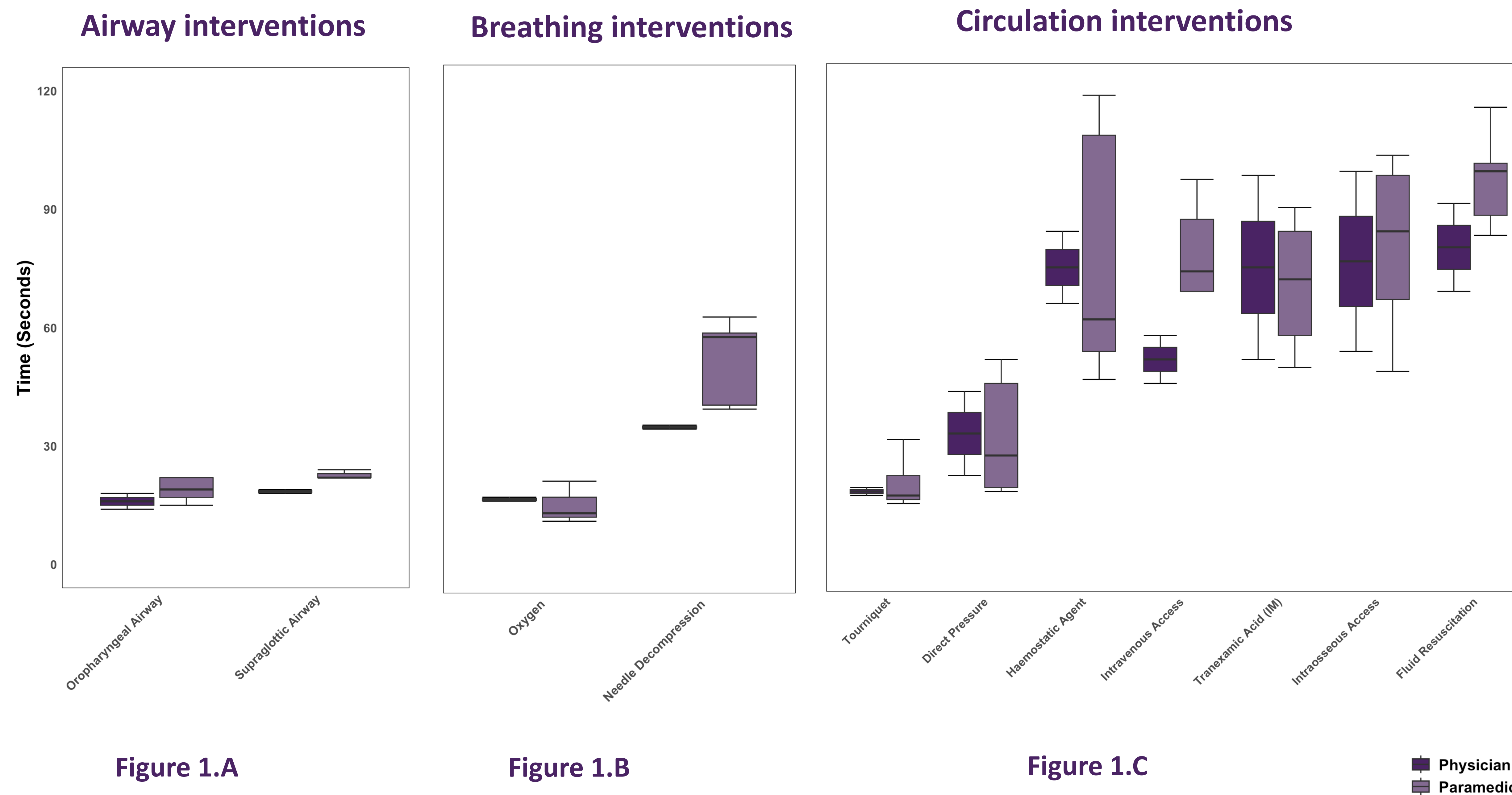


Figure 1. Time taken to complete interventions by healthcare professional type.

## Physician-only interventions

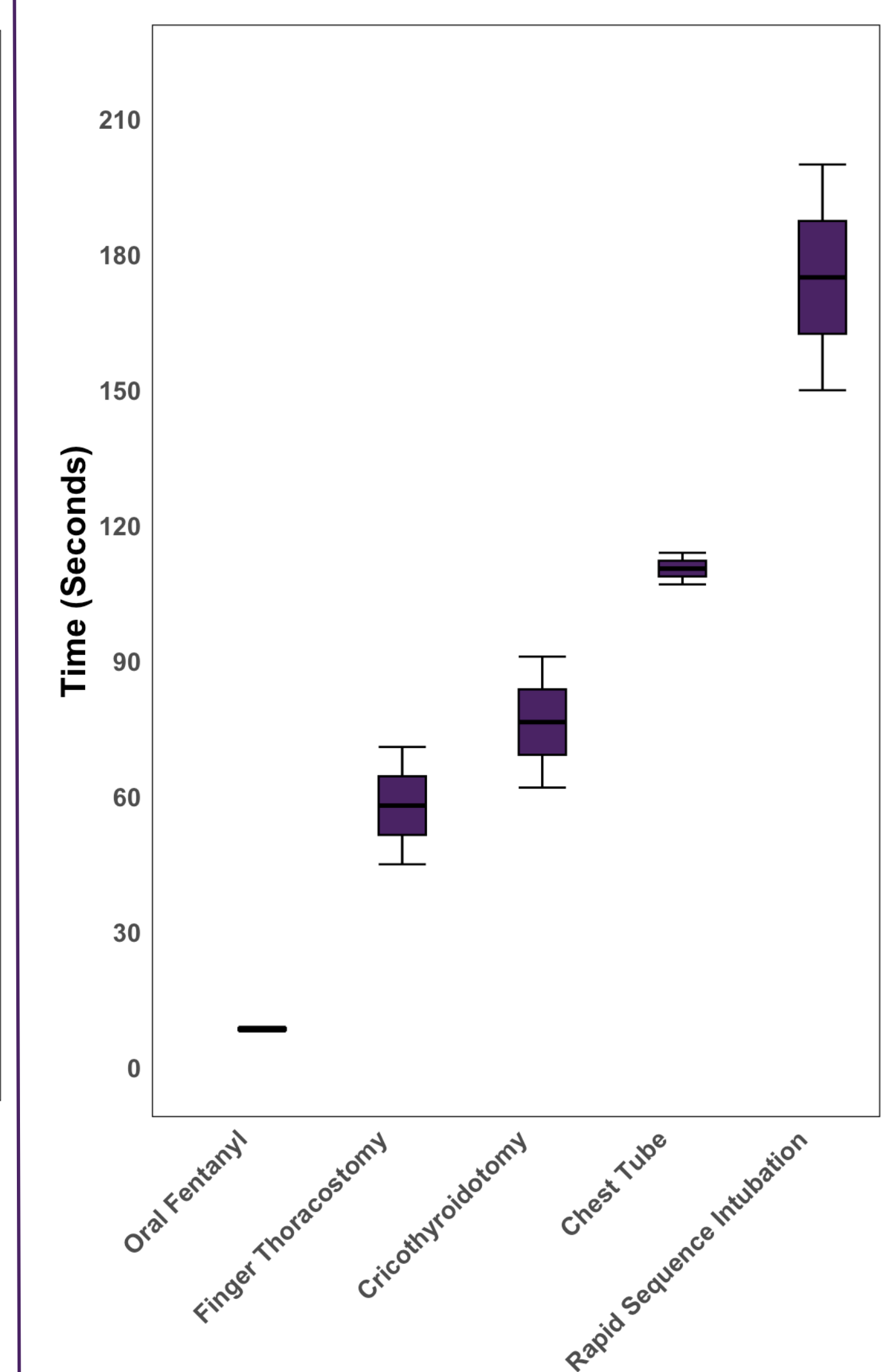


Figure 2. Time taken to complete physician-only performed interventions.

## Conclusions

This pilot study demonstrated the feasibility of recording timings for LSIs. Physician-only performed LSIs had the longest TT but were also more complex interventions. Further investigation within a simulated environment is planned to investigate the effects of timings/delays on outcomes in MCIs.

