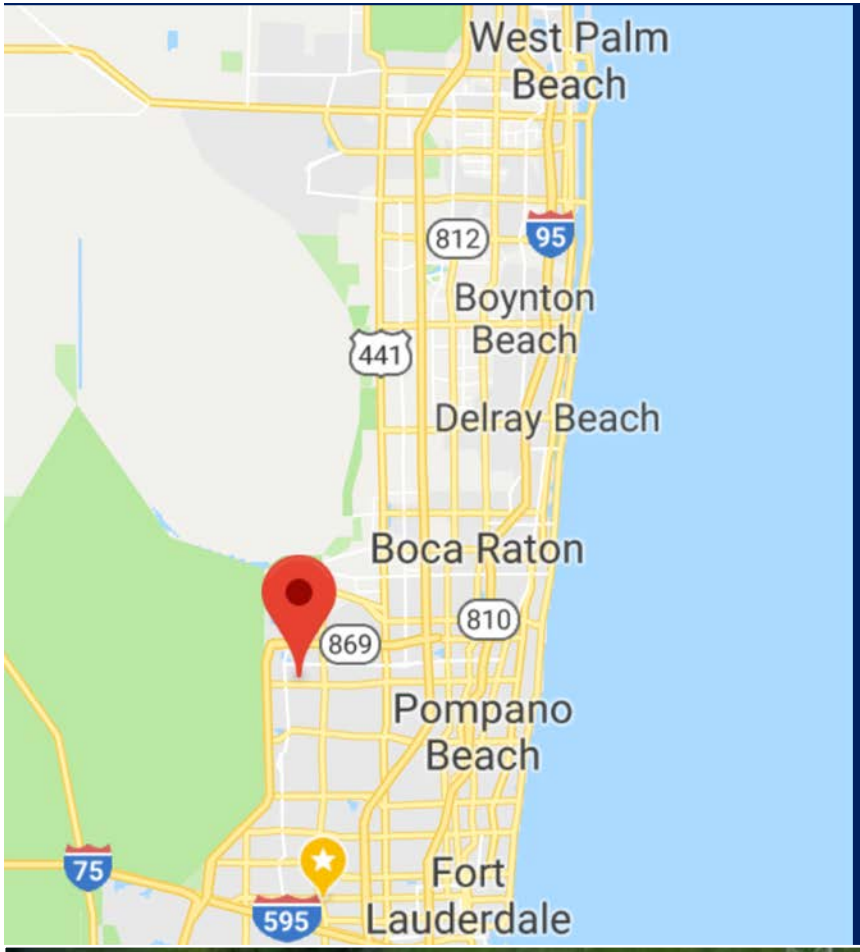
Deliberately Delivering a DASH of DSI:

Re-Considering RSI for ETI

First, the Facts



Coral Springs – Parkland

- 160, 000 Residents
- 43 Square Miles
- 15,000 calls/year


SHERIFF
BROWARD COUNTY
N158B
FIRE RESCUE
SPECIAL OPS

RSI Launched 1 Year Ago

Delayed Sequence Intubation

Study Primary Outcome: **Hypoxia** from 1 min pre-paralytic to 1 min post paralytic.

44%

3%

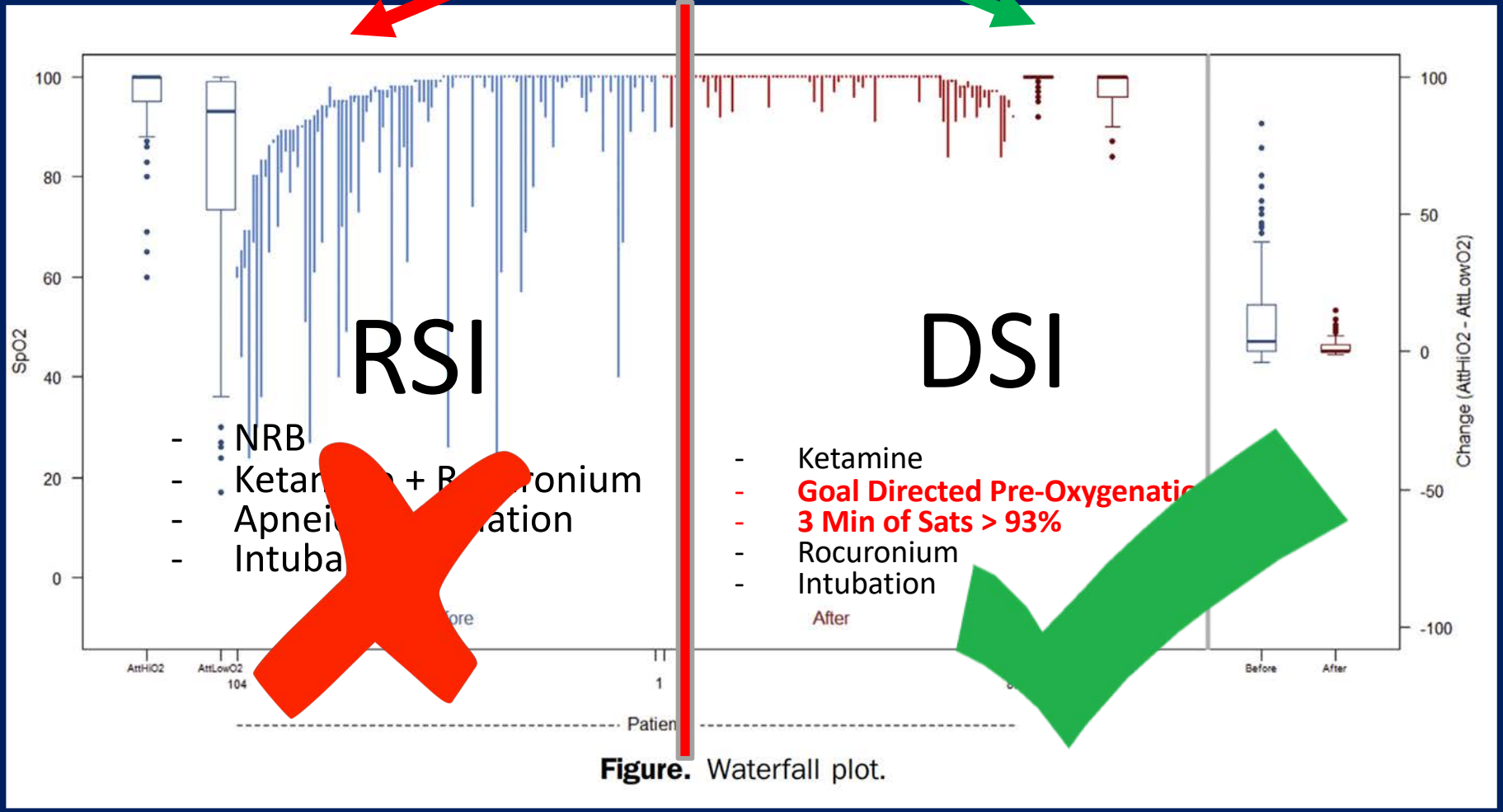


Figure. Waterfall plot.

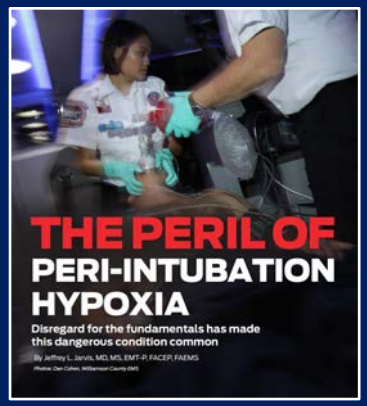
Coral Springs / Parkland FD
DSI Training 2019

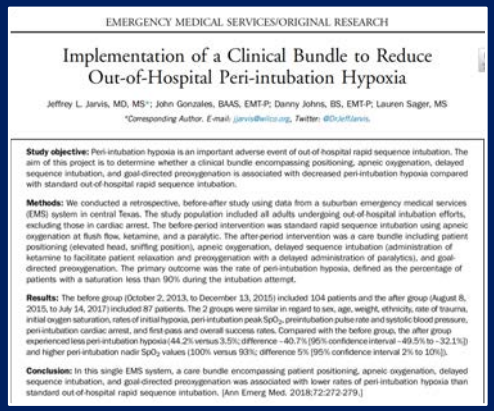
Adult & Pediatrics

Pre-Course Preparation

Prior to today's training you should have reviewed the following:

1. EMS World Cover Story - Jan 2019
2. DSI Paper by Dr. Jarvis - Annals of EM
3. DSI talk by Dr. Weingart - YouTube
4. PEEP valve video - YouTube
5. WILCO DSI Video - YouTube




EMERGENCY MEDICAL SERVICES/ORIGINAL RESEARCH

Implementation of a Clinical Bundle to Reduce Out-of-Hospital Peri-intubation Hypoxia

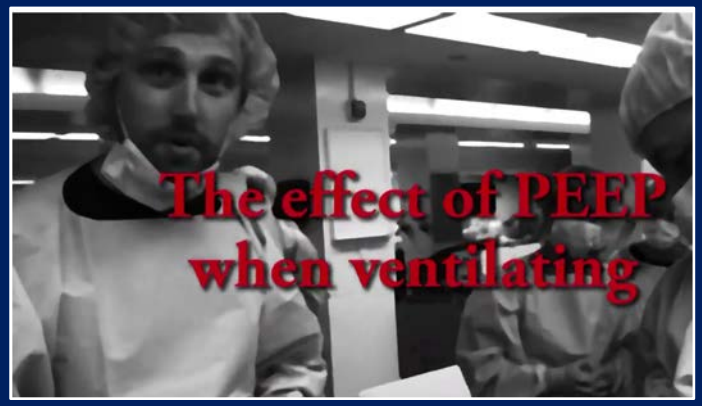
Jeffrey L. Jarvis, MD, MS*; John Gonzales, BAAS, EMT-P; Danny Johns, BS, EMT-P; Lauren Sager, MS

Study objective: Peri-intubation hypoxia is an important adverse event of out-of-hospital rapid sequence intubation. The aim of this project is to determine whether a clinical bundle encompassing positioning, apneic oxygenation, delayed sequence intubation, and goal-directed preoxygenation is associated with decreased peri-intubation hypoxia compared with standard out-of-hospital rapid sequence intubation.

Methods: We conducted a retrospective, before-after study using data from a suburban emergency medical services (EMS) system in central Texas. The study population included all adults undergoing out-of-hospital intubation efforts, excluding those in cardiac arrest. The before-period intervention was standard rapid sequence intubation using apneic oxygenation at flush flow, ketamine, and a paralytic. The after-period intervention was a care bundle including patient positioning (elevated head, sniffing position), apneic oxygenation, delayed sequence intubation (administration of ketamine to facilitate patient relaxation and preoxygenation with a delayed administration of paralytics), and goal-directed preoxygenation. The primary outcome was the rate of peri-intubation hypoxia, defined as the percentage of patients with a saturation less than 90% during the intubation attempt.

Results: The before group (October 2, 2013, to December 13, 2015) included 104 patients and the after group (August 8, 2015, to July 14, 2017) included 87 patients. The 2 groups were similar in regard to sex, age, weight, ethnicity, rate of trauma, initial oxygen saturation, rates of initial hypoxia, peri-intubation peak SpO_2, preintubation pulse rate and systolic blood pressure, peri-intubation cardiac arrest, and first-pass and overall success rates. Compared with the before group, the after group experienced less peri-intubation hypoxia (44.2% versus 3.5%; difference −40.7% [95% confidence interval −49.5% to −32.1%]) and higher peri-intubation nadir SpO_2 values (100% versus 93%; difference 5% [95% confidence interval 2% to 10%]).

Conclusion: In this single EMS system, a care bundle encompassing patient positioning, apneic oxygenation, delayed sequence intubation, and goal-directed preoxygenation was associated with lower rates of peri-intubation hypoxia than standard out-of-hospital rapid sequence intubation. [Ann Emerg Med. 2018;72:272-279.]



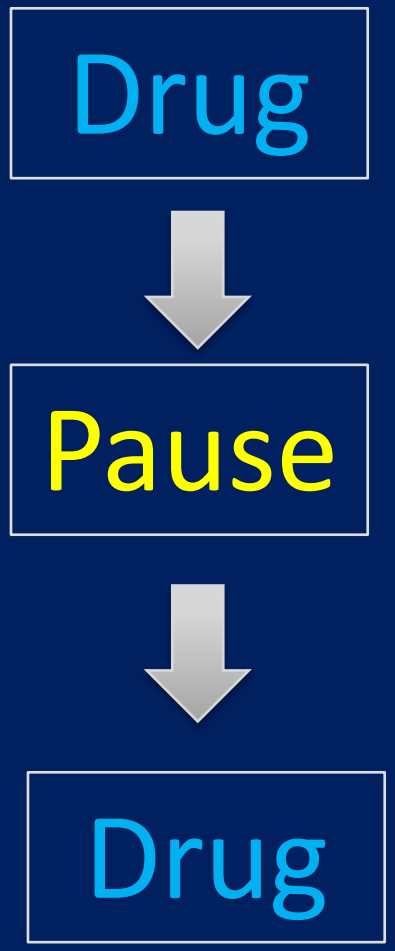
DSI Steps

- Preparation (Gear and Medications)
- DRUG : **Pretreatment (Ketamine)**
  - EtCO2 must be added here

3 minute pause – Sats > 93%

Pre-oxygenation (BVM+PEEP/NRBM/NC)

- DRUG: **Paralysis (Rocuronium)**
  - If Needed
- Airway Management



DSI Checklist

"Feels Like Slow Motion"

ed Sequence Intubation Checklist

Coral Springs Parkland FD DSI Checklist

Roles

☐ Identify the Lieutenant _____

☐ Identify the airway operator _____

☐ Identify who will hold the BVM _____

Pre-procedure	Equipment	PROTECT
☐ 4-lead ECG in place	☐ Pre-oxygenation assembly: BVM, HME, $EtCO_2$, PEEP, CPAP mask (optional)	☐ Pt's ears to sternal notch
☐ SpO_2 in place w/good pleth wave	☐ Intubation kit	☐ Raise the mandible
☐ $EtCO_2$ w/every breath	☐ King Vision camera (Test blade & screen before intubation)	☐ OPA/NPA
☐ Accurate blood pressure	☐ Stop watch	☐ Thumbs down masking
☐ Consider early Ketamine	☐ Suction	☐ EtCO2 with every breath
☐ PROTECT	☐ C-collar	☐ Check PEEP/Oxygen
	☐ iGel readily available	☐ Tension/Distension
		Raise head of bed to be elevated at least 15* and pad under shoulders/neck
		*If Needed

Sedation and Pre-oxygenation

☐ **Correct Hypotension** with **fluids and pressors**

☐ Administer **Ketamine 200 mg IVP/IO**
- Pre-intubation $EtCO_2$ _____
- Post-ketamine, pre-intubation respiratory rate _____

☐ Replace $EtCO_2$ cannula with **standard nasal cannula** at **max flush rate.**

☐ Perform 2-handed mask seal w/pre-oxygenation assembly & **set PEEP to at least 5 cm/H_2O**
- Adequate breathing & SpO_2 ≥ 94%: BVM seal with **NO** ventilations
- Adequate breathing & SpO_2 < 94%: BVM seal with **NO** ventilations **AND** increase PEEP
- Inadequate breathing: BVM seal with ventilations

☐ Maintain **SpO_2 ≥ 94%** for **at least 3 minutes**
- Use stopwatch to record pre-oxygenation duration
- **Time SpO_2 ≥ 94%** _____

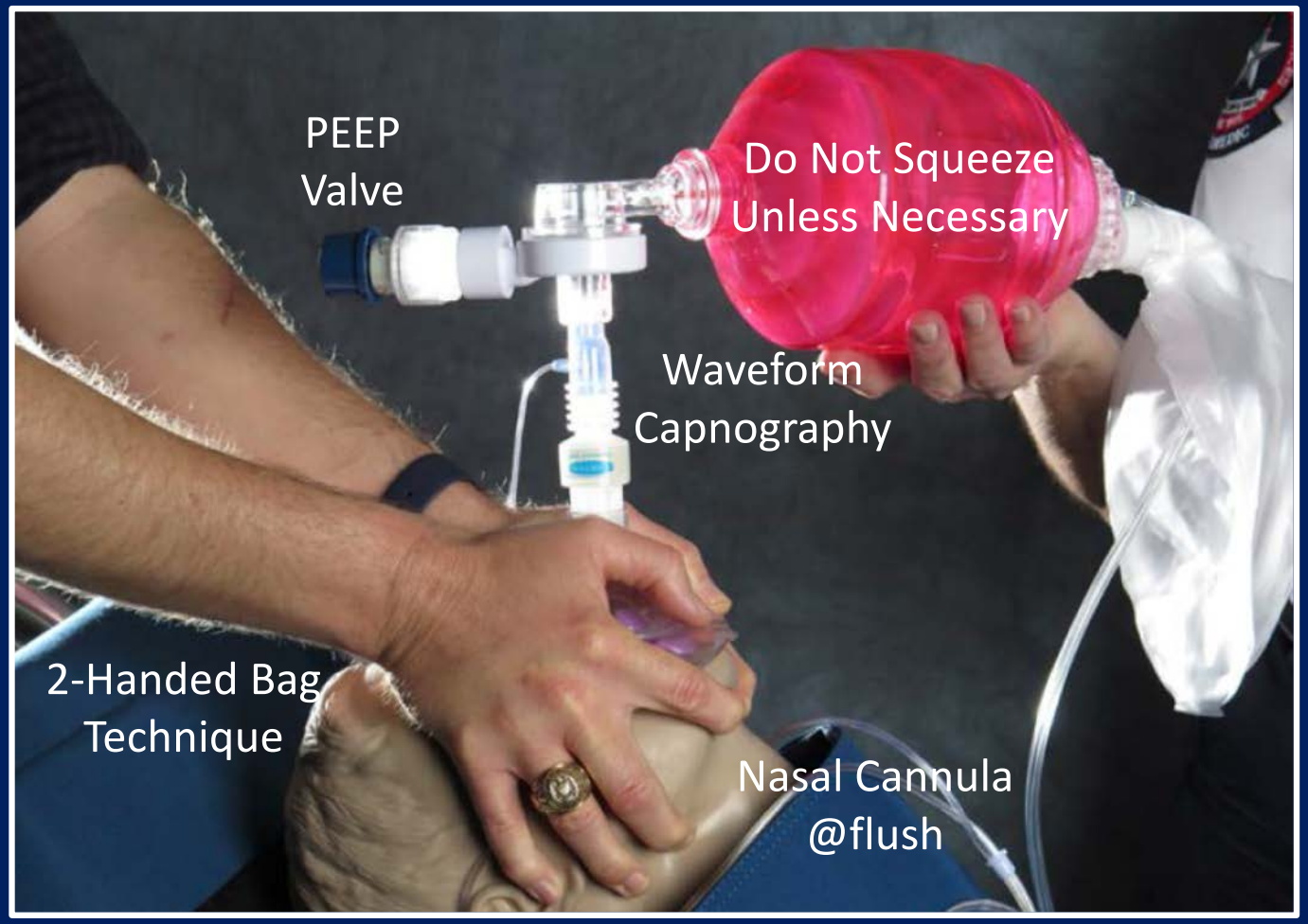
☐ Administer **Rocuronium 100 mg IVP/IO** & wait at least 90 seconds or until paralysis is achieved
- **Time Rocuronium administered** _____

Step #1 - Positioning

Step #2 – Give Ketamine

1. Administer Ketamine
2. Upon Dissociation apply **BVM + PEEP**
   - Start PEEP at 5 mmHg
3. Use adjunct as needed
4. Crank up the NC as far as it goes
   - “Flush”

The Tower of Power



Step #3 – Goal-Directed O2 Saturation

1. Obtain O2 saturation **of > 93% for minimum of 3 minutes**
   - Put O2 sat probe on diff. extremity than the BP cuff
2. Begin stopwatch to ensure full 3 minutes > 93%

Why 3 minutes?

- Adequate pre-oxygenation
- Achieves nitrogen wash-out

Step #4 – Give Rocuronium

1. Gently squeeze BVM 1X every 6 seconds
2. Wait 90 seconds for full relaxation then intubate

What if Sats Drop (<94%) after Paralysis?

- Abort tube placement
- Use methods to increase saturation
  1. Gently ventilate (BVM+PEEP)
  2. Airway adjuncts
  3. i-Gel
  4. Cricothryotomy if needed

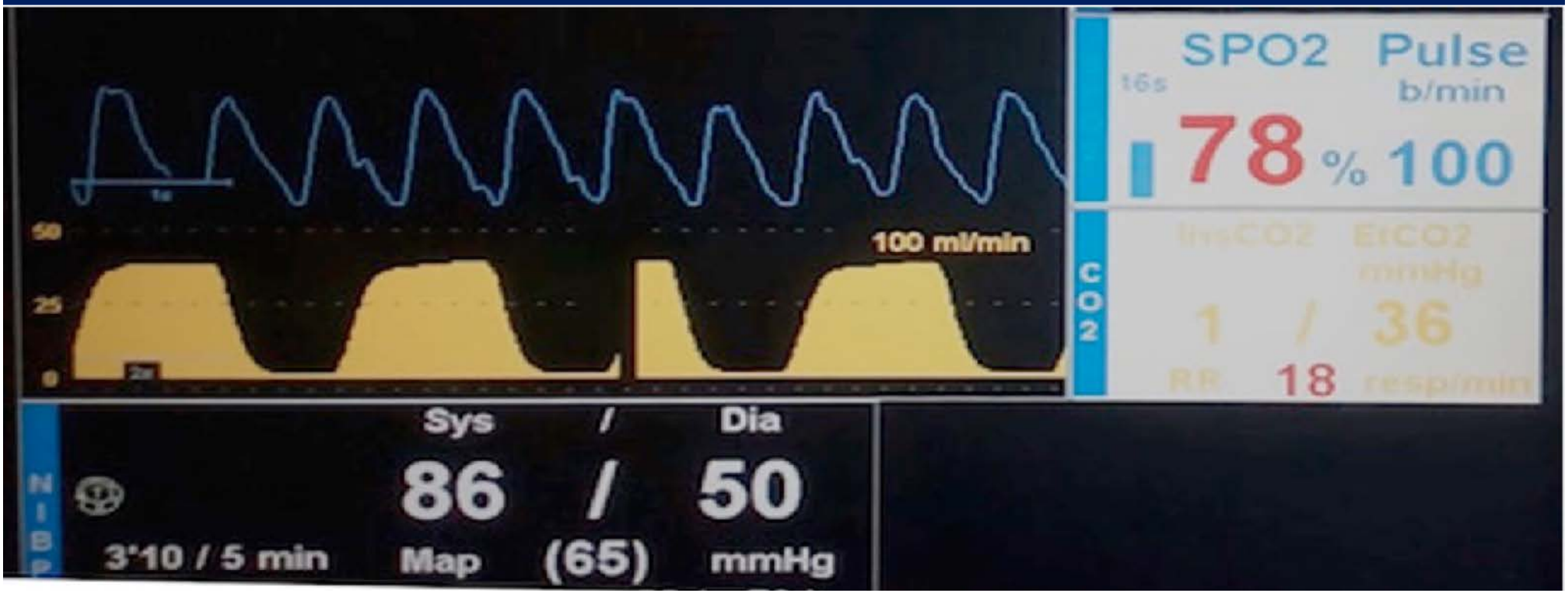
Step #5 – Intubate

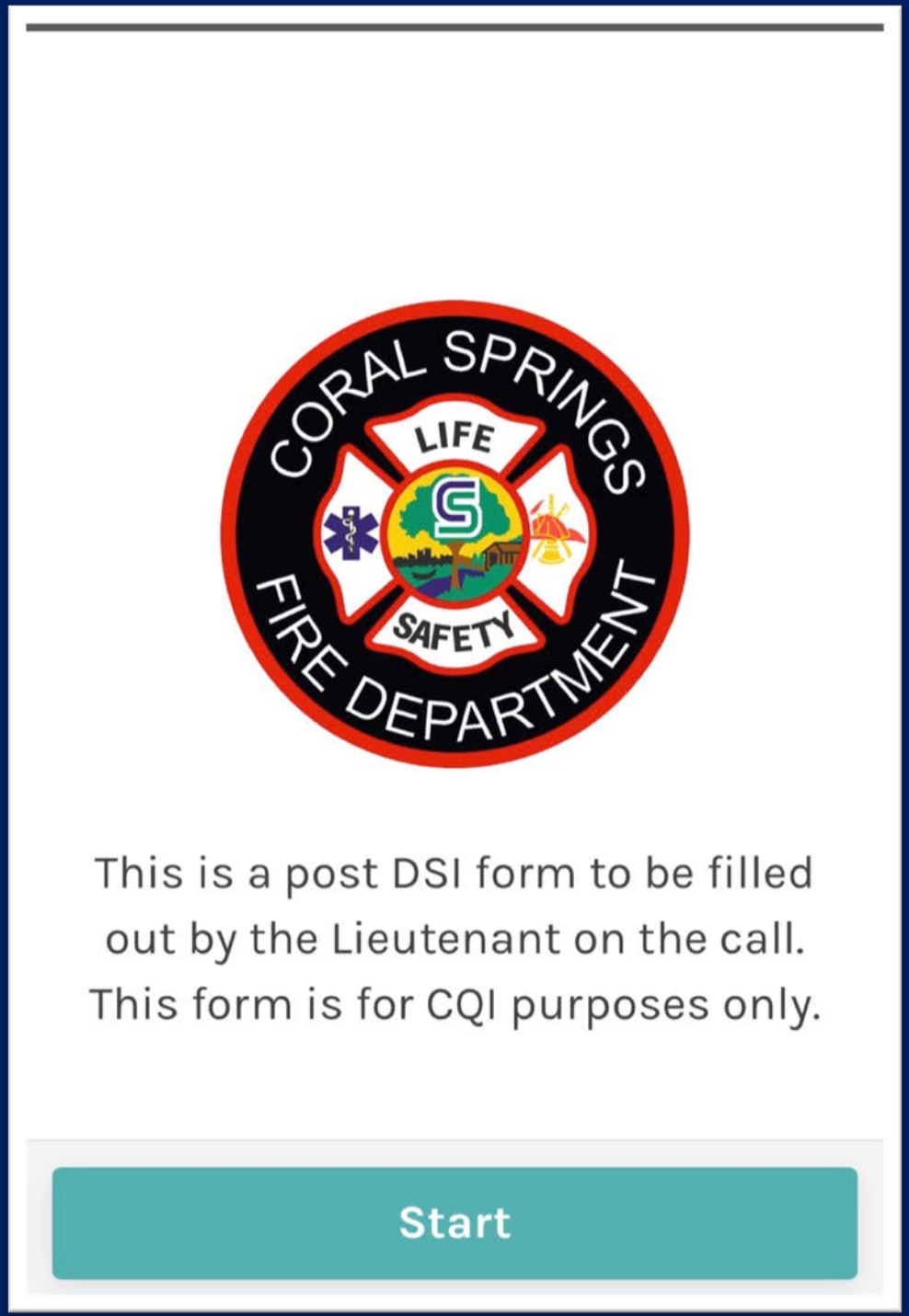
- 10 YR to Adult – Use Video Laryngoscopy
  - (Review Wilco Video)
- Maximum of 2 Attempts – then move to i-gel

Definitive **A**irway **S**ans **H**ypoxia

DASH

vs. First Pass Success





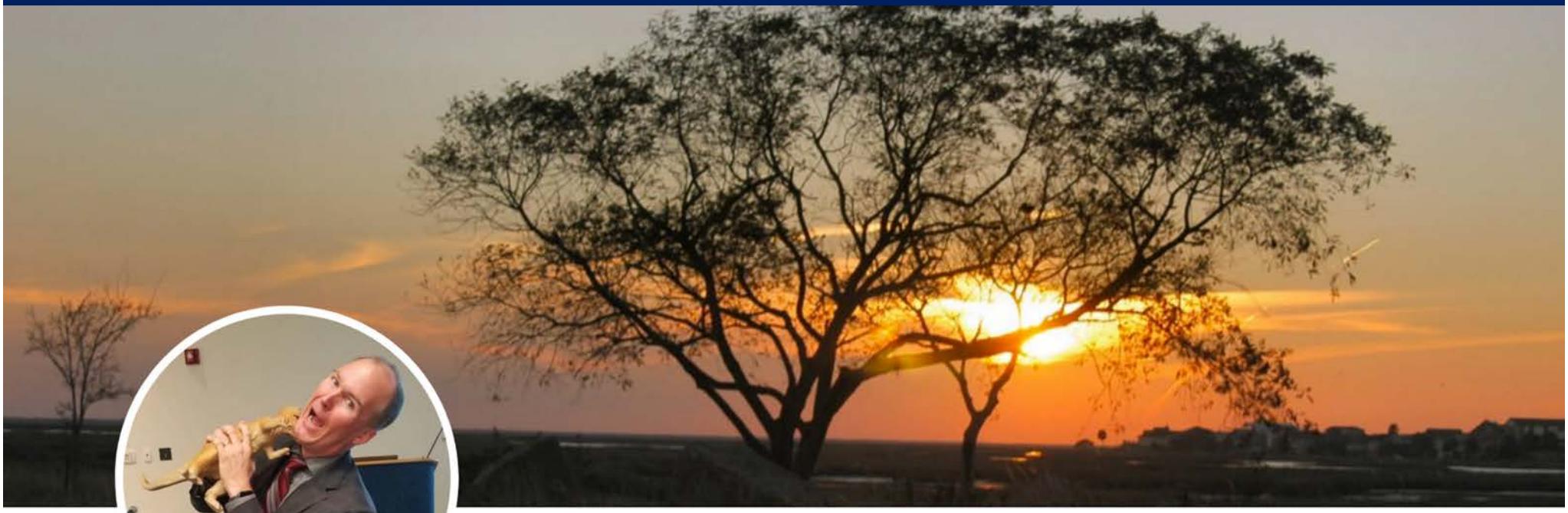
Mobile Friendly CQI Form

Lt. Lazaro Ojeda

Summary

- Abandon RSI
- DSI Checklist
- Psychological Barriers
- Follow Your Data
- Thank you Jeff Jarvis!

LIVE UPDATE



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