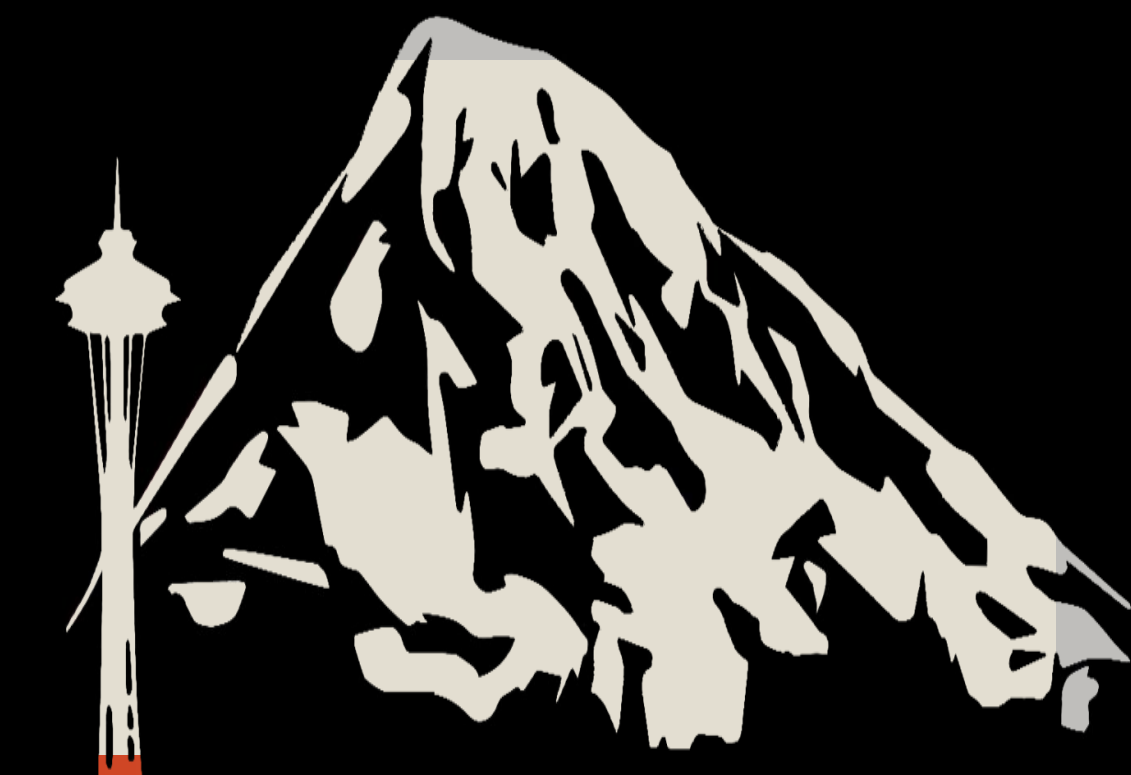


Development of Defense Registry for Emergency Airway Management (DREAM)

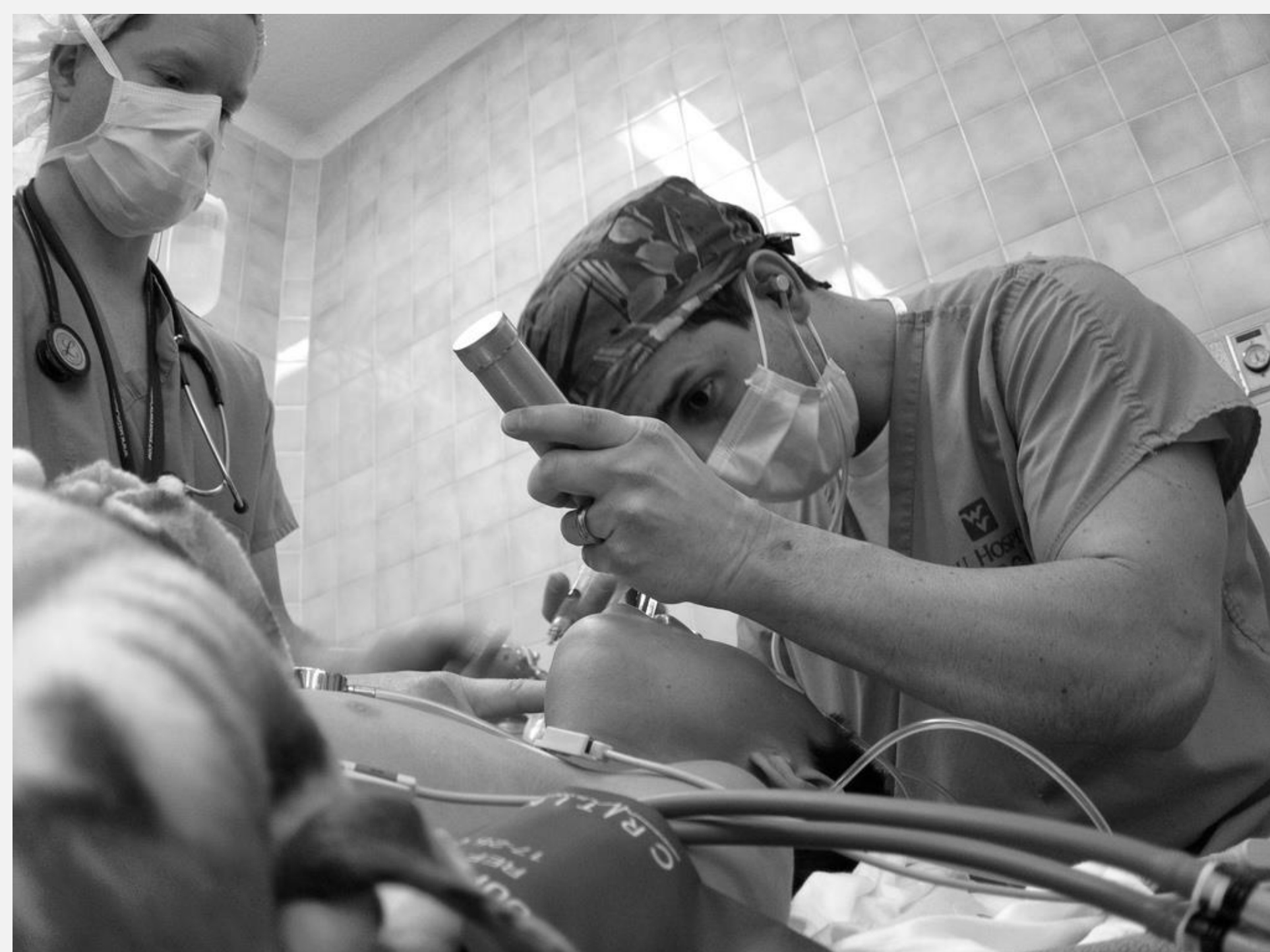


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INTRODUCTION

Airway obstruction is the second leading cause of potentially preventable death on the battlefield. Endotracheal intubation is a critical skill needed by military emergency physicians (EP). Ensuring military EP readiness requires proper training and hands-on experience with intubations at home and abroad.



In 2016, Brook Army Medical Center (BAMC) emergency department (ED) joined a multicenter observational intubation registry as part of a research-based surveillance of intubation practices as part of National Emergency Airway Registry (NEAR). NEAR data capture ended in December 2018. **Published NEAR data demonstrated the value of continuous collection and analysis of military-relevant airway management data.** As a result, we decided to develop a military-specific airway registry mirroring NEAR.

We aim to describe the development of the Defense Registry for Emergency Airway Management (DREAM) at Brooke Army Medical Center (BAMC) and Madigan Army Medical Center (MAMC).

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Disclaimer

The opinions or assertions contained herein are the private views of the author(s) and are not to be construed as official or as reflecting the views of the Department of Defense. The investigators have adhered to the policies for protection of human subjects as prescribed in 45 CFR 46

METHODS

Emergency physicians performing endotracheal intubations in the BAMC and MAMC ED completed standardized data collection forms with information about each event. Trained study team members extracted additional data from the medical records. We cross-referenced each intubation with patient tracking systems in the department and would fill in missing variables through interview with the intubating operator and/or medical records review. by capturing method of airway obtainment, complication rates, and number of difficulty airways encountered, in order to devise future data driven solutions. See Figure 1. for data collection form.

DATE _____ [PATIENT STICKER]

OBSERVER:

1. RECORD VITALS

With first RSI med SpO2 _____ % SBP _____ mmHg
 Lowest between first RSI med and 2 min after ETT in trachea SpO2 _____ % SBP _____ mmHg

2. DURING OF INTUBATION PROCEDURE

FIRST RSI MED PUSHED _____ : _____ : _____ (hr/min/sec)
 ETT IN TRACHEA _____ : _____ : _____ (hr/min/sec)

3. ATTEMPTS

NUMBER of times the laryngoscope entered the patients mouth _____
 NUMBER of times the endotracheal tube entered the patients mouth _____

4. PREOXYGENATION (before RSI meds pushed)

Nasal cannula / HFNC / NRB / Bag-mask / BiPAP None / Other _____

5. FROM FIRST RSI MED TO LARYNGOSCOPY

Nasal cannula / HFNC / NRB / Bag-mask / BiPAP None / Other _____

INTUBATOR:

6. COMPLICATIONS (circle all that apply)

None / Cardiac arrest within 10 minutes of intubation / HR<40 / Esophageal intubation at any time / Airway trauma / Aspiration / Hypotension <90mmHg up to 10 minutes post-intubation

7. VASOPRESSORS

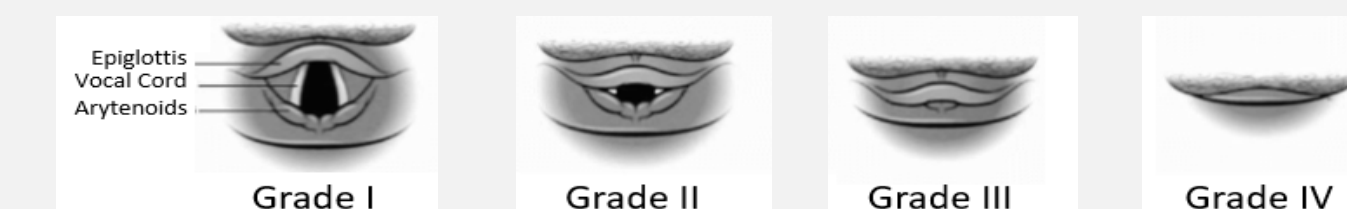
Preintubation: None / Norepinephrine / Epinephrine / Vasopressin
 Postintubation: None / No change / Increased dose or new vasopressor

8. INTUBATION INDICATION

Airway obstruction / Facial trauma / Respiratory failure / Anticipated clinical course / AMS
 Other _____

9. FIRST ATTEMPT

Device: DL / McGrath / C-MAC / Glidescope / Storz / iView / Other _____
 Other adjuncts (circle all): Stylet / Bougie / Bronchoscope / LMA / Other _____



Successful intubation on first attempt: YES / NO
 If not, why: inadequate view / inadequate relaxation / difficulty passing tube/bougie / Other _____

10. DIFFICULT AIRWAY FEATURES

None / C-collar / Bodily fluid in airway / Facial trauma

Specialty: Emergency Medicine / Anesthesia / Other _____

Training level: Resident / Fellow / Attending / NP / PA / Other _____

*****11. IF MORE THAN ONE ATTEMPT, COMPLETE BACK SIDE*****

Name of person completing form _____
 Date form completed _____

RESULTS

EPs performed a total of 74 intubations. **Reasons for intubation were related to trauma for 47 patients (64%) and medical conditions for 26 patients (36%). Patient median age was 51 (interquartile range 30-72) and most were male 48 (65.7%). Difficult airway characteristics were blood in the airway (26%), facial trauma (23%), and airway obstruction (1%).** Most intubations utilized video laryngoscopy utilizing C-MAC (45%) and the Glidescope (41%). **Overall first-pass success rate was 93% with majority of intubations performed by second year emergency residents (61%) followed by first year residents (28%).**

DISCUSSION

We found that EPs used video laryngoscopy most frequently with a high first-pass success rate. A majority of the total number of intubations involved trauma patients, highlighting the importance of a public trauma mission to maintain military medical readiness. Our study demonstrates that emergency resident physicians received robust airway management experience that will prepare them for future deployed missions. **We must also note that the preponderance of intubations appeared to happen via VL rather than DL.** Our finding of similar first pass success between VL and DL is different than repeated findings in the literature that VL optimizes first pass success and is likely a reflection of low sample size and patient selection for DL.

This study has several limitations. Due to COVID19 pandemic research team had limited physical access to the department during the early phases of the pandemic. As such, we do not have data assessing the number of missing intubation forms that were not properly documented. Some recall and sampling bias may be present. Given our small sample size and limited period, we were unable to complete cross-group comparisons. Moreover, we are unable to identify any trends currently that allow for performance improvement feedback. Larger data sets are necessary to identify trends and study the effects of practice patterns on outcomes.

CONCLUSION

Most DREAM intubations were related to traumatic injuries. The most frequently encountered difficult airway characteristics were blood in airway and facial trauma. Most intubations were conducted using video laryngoscopy with a high first-pass success rate similar to other published studies. **Expansion of the registry to other military emergency departments would enable a data-driven solution for development of individual critical task lists (ICTLs).**

Figure 1. DREAM Data Collection Form