

# County of Santa Clara Emergency Medical Services System



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**Date:** May 21, 2018  
**To:** EMS System Stakeholders  
**From:** David Sullivan *D.S.*  
County of Santa Clara  
Emergency Medical Services Agency  
**Subject:** Prehospital Care Policy Updates (Pediatric Intubation)

Consistent with *Santa Clara County Emergency Medical Services Prehospital Care Policy 109 - Policy Development and Implementation*, the EMS Agency announces five prehospital care policy updates. These policies will not have a public comment period.

Policy Name/Effective Date	Description of Change
<b>301: SUPPLEMENTAL EMS SYSTEM RESOURCES</b> <b>Effective: July 1, 2018</b> <a href="https://www.sccgov.org/sites/ems/Documents/pcm300/newPolicy301.pdf">https://www.sccgov.org/sites/ems/Documents/pcm300/newPolicy301.pdf</a>	<b>Update:</b> Endotracheal tubes smaller than 6.0 mm have been removed from ALS inventory requirements.
<b>302: PREHOSPITAL CARE ASSET – MINIMUM INVENTORY REQUIREMENTS</b> <b>Effective: July 1, 2018</b> <a href="https://www.sccgov.org/sites/ems/Documents/pcm300/newPolicy302.pdf">https://www.sccgov.org/sites/ems/Documents/pcm300/newPolicy302.pdf</a>	<b>Update:</b> Endotracheal tubes smaller than 6.0 mm have been removed from ALS inventory requirements.
<b>302 - B: SPINE BOARD REQUIREMENTS</b> <b>Effective: July 1, 2018</b> <a href="https://www.sccgov.org/sites/ems/Documents/pcm300/newPolicy302-B.pdf">https://www.sccgov.org/sites/ems/Documents/pcm300/newPolicy302-B.pdf</a>	<b>Update:</b> Annual minimum replenishment requirements have been reduced by 50% for all permitted asset categories.
<b>700-M01: AIRWAY MANAGEMENT</b> <b>Effective: July 1, 2018</b> <a href="https://www.sccgov.org/sites/ems/Documents/pcm700/700-M/700-M01.pdf">https://www.sccgov.org/sites/ems/Documents/pcm700/700-M/700-M01.pdf</a>	<b>Update:</b> All mentions of pediatric intubation have been removed from the protocol.
<b>700-P07: PEDIATRIC CARDIAC ARREST</b> <b>Effective: July 1, 2018</b> <a href="https://www.sccgov.org/sites/ems/Documents/pcm700/700-P/new700-P07.pdf">https://www.sccgov.org/sites/ems/Documents/pcm700/700-P/new700-P07.pdf</a>	<b>Update:</b> All mentions of pediatric intubation have been removed from the protocol.

Explanation from Dr. Ken Miller:

In December 2017 the CA EMS Authority, in the attached letter, declared that pediatric endotracheal intubation will be removed from the paramedic basic scope of practice in California and that local EMS agencies must comply by June 30, 2018. To that end, by June 30, 2018, all Santa Clara County EMS provider agencies authorized to provide paramedic advanced life support services are instructed to remove all endotracheal tubes below size 6.0 mm from EMS response units.

For the purposes of this Memo, 'pediatric' is defined as patients who fit within the length-based weight estimate of the Broselow or similar tape. Any patient who **fits** the tape and who requires definitive airway management should **not** be intubated.

Pediatric sized direct laryngoscopes are still authorized for use in airway visualization for foreign body removal. Updates to pediatric clinical protocols have been made (700-P07).

During the 2018 Annual EMS Update, the Santa Clara County EMS Agency will provide education and introduce a supraglottic airway that will include pediatric sizes as an additional pediatric airway management adjunct to BVM ventilation. That supraglottic airway will become part of the ALS inventory in February 2019.

Please direct any questions to Ken Miller, EMS Medical Director, by phone at 408.794.0615, or via email at [kenneth.miller@ems.sccgov.org](mailto:kenneth.miller@ems.sccgov.org)

**EMERGENCY MEDICAL SERVICES AUTHORITY**

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**DATE:** December 6, 2017

**TO:** Commission on EMS

**FROM:** Howard Backer, MD, MPH, FACEP  
Director

**PREPARED BY:** Sean Trask, Chief  
EMS Personnel Division

**SUBJECT:** Pediatric Endotracheal Intubation

**RECOMMENDED ACTION:**

Receive information concerning the planned phaseout of pediatric endotracheal intubation for ground-based ambulance and advanced life support units.

**FISCAL IMPACT:**

There may be cost savings from not purchasing pediatric sized endotracheal tubes. However, there may be an alternative advanced airway that could offset these savings.

**DISCUSSION:**

At the September 12, 2017, meeting of the Emergency Medical Services Medical Directors of California's (EMDAC) Scope of Practice Committee recommended, to the Director of the EMS Authority, to phase out pediatric endotracheal intubation from the local optional scope of practice by July 1, 2018. Dr. Backer accepted this recommendation and released a memo to the local EMS agency medical directors, and administrators informing them of this decision.

The recommendation was made after three lengthy discussions over the course of three Scope of Practice Committee meetings in March, June, and September 2017.

Pediatric endotracheal intubation is an advanced airway intervention which is not part of the paramedic basic scope of practice, however this skill is permitted as a local optional scope item, with local EMS agency approval, for paramedics. When a local EMS agency wants to add or continue a paramedic local optional scope item, the local EMS agency medical director is required to submit an application for approval or renewal to the EMS Authority. The application and supporting documentation are reviewed by the Scope of Practice Committee (Committee). The Committee then makes a

recommendation to the Director of the EMS Authority to approve the request, request additional information, or deny the request.

In 2013, the Paramedic Regulations were revised which limited approved local optional scope items to a three year period. The purpose was to require a periodic review by the local EMS agencies to evaluate each local optional scope item and ensure it was still necessary and effective. As of January 1, 2017, pediatric endotracheal intubation was approved in 24 of the 33 local EMS systems in California. Those local EMS agencies wishing to renew this skill were required to apply for continuation of this skill. The Committee had been discussing this skill since March 2017 at their quarterly meetings.

At the September 12, 2017 Scope of Practice Committee meeting, the Committee made the recommendation to phase out pediatric endotracheal intubation by July 1, 2018. This recommendation followed a comprehensive review of the literature presented by Dr. Joelle Donofrio. The primary reasons for the recommendation are because pediatric endotracheal intubation is a low-frequency intervention with a high potential for complications and generally negative outcomes compared to less invasive interventions.

The Committee did not recommend a firm age cutoff since the age of transition from childhood to adult anatomy is between 8 and 12 years old. The cut-off will be determined by length—children who fit on a pediatric length-based tape (e.g., Broslow), which corresponds to approximately 40 kilograms.

Local EMS agency protocols may continue the procedure to visualize the airway with a laryngoscope and remove a foreign body with Magill forceps, which is part of the paramedic basic scope of practice.

The July 1, 2018, deadline allows sufficient time for local EMS agencies to revise local EMS protocols, to review alternative available airway devices and methods and provide necessary training to EMS personnel. Alternatively, advanced airways may include supraglottic airways such as the laryngeal mask airway and the i-Gel airway that are available in pediatric sizes. Since supraglottic airways are not part of the paramedic basic scope of practice, a local optional scope request needs to be submitted to the EMS Authority. A model request is being developed by EMDAC members.

Attachments: Pediatric Prehospital Intubation Presentation  
Phase Out of Pediatric Endotracheal Intubation Memo



# Pediatric Prehospital Intubation

**J. Joelle Donofrio, DO**

Associate EMS Fellowship Director, UCSD

EMS Medical Director, Rady Children's Hospital of San Diego

Assistant Professor of Clinical Medicine, UCSD School of Medicine

# Overview

- **ETI competency and retention**
- **Historical overview**
- **Specific scenarios**
- **Paramedic aspect**
- **Conclusion**

# Quick Test

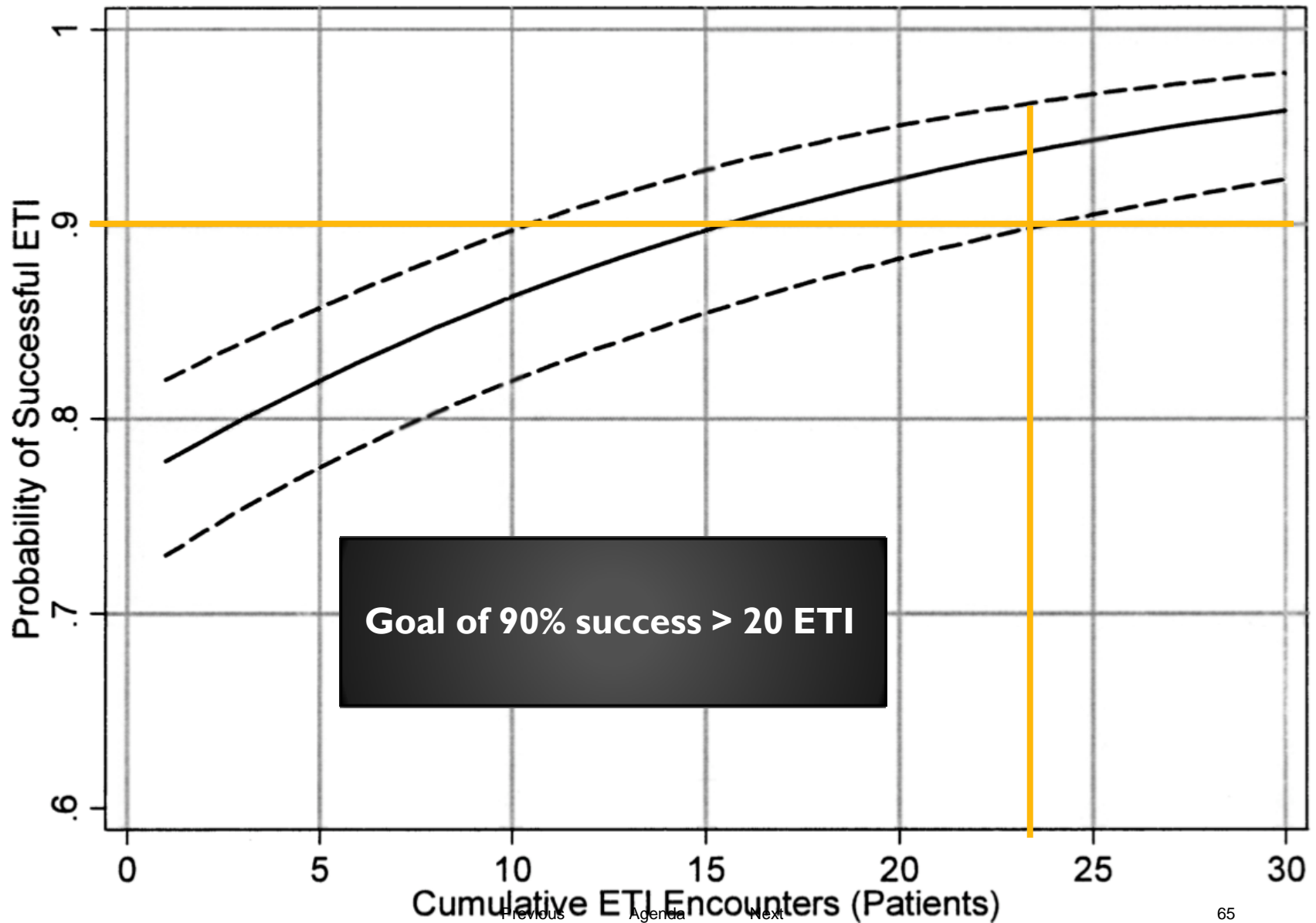
- 23 month old in cardiac arrest
  - ETT size?
  - Blade?
  - Depth?
  
- 4.5 year old in cardiac arrest
  - ETT size?
  - Blade?
  - Depth?

# Initial Competency

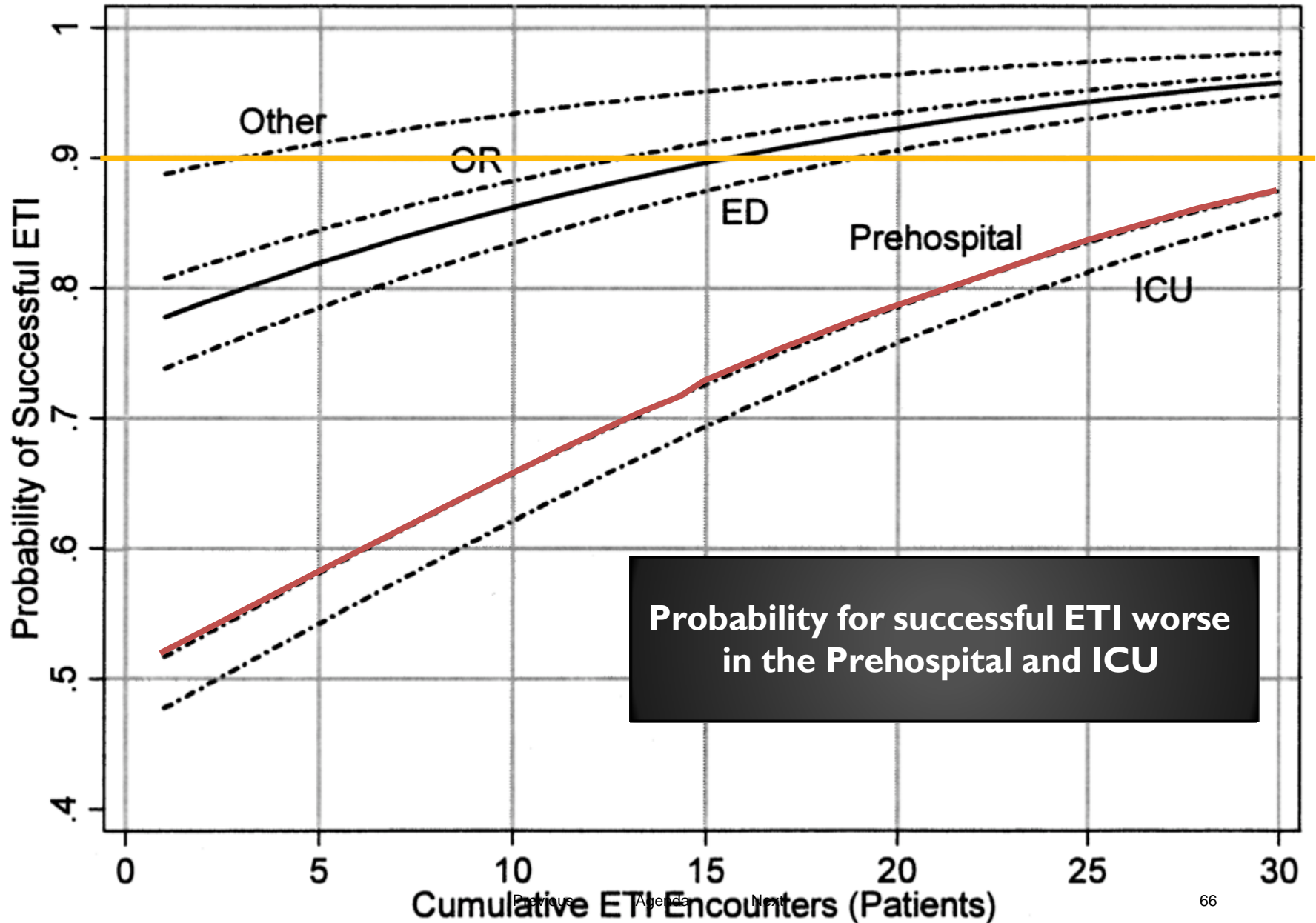
- What is considered competent?
  - Let's assume goal of 90% successful ETI
  - Do you train for competency in OR or in prehospital?
    - 90% ETI success rate in OR: **30 live ETI needed** (Toda 2013, adults)
    - 802 Paramedic Students in 60 programs over 2 years (Wang 2009, adults)
      - 11% with 0 ETI
      - 69% with 10 ETI
      - 22% with 20 ETI
      - **9% with >20 ETI**



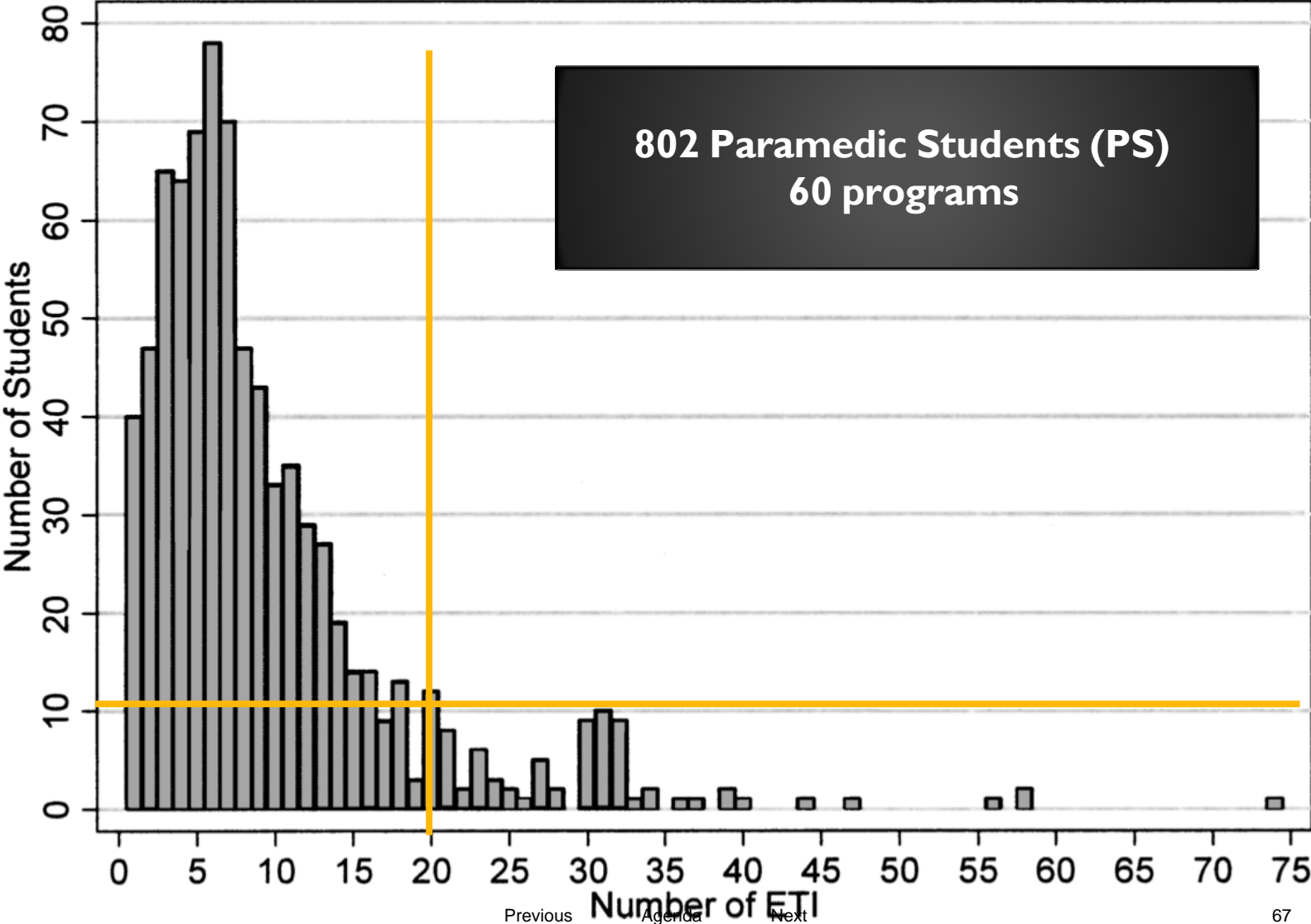
# Cumulative ETI and Probability of Successful ETI



# Location Specific ETI and Probability of Successful ETI



# Size of Class and Number of ETI Performed



# Training Issues in Pediatric Airway

- **Additional knowledge**
  - Different anatomy: large occiput, large tongue, anterior airway
  - BVM: proper seal, proper rate, proper size, suctioning
  - Pediatric ETI: tube, blade, depth
- **Enough pediatric live ETI opportunities?**
- **Minimum required?**
  - Ex: King County- Min required 2 peds ETI but average 6 (Prekker 2016)



**Pediatric airway: it's not just the ETI**

**What is the skill retention for the  
basic maneuvers and the ETI?**

# Pediatric Skill Retention

- **Youngquist 2008**

- 212 paramedics voluntary retraining exercise
- Pediatric airway skills decay quickly
  - **66% (139/211) passed BVM testing**
  - **42% (88/212) passed ETI testing**
- Skill drops significantly within 6 months and is unaffected by the number of pediatric runs/shift
- Only 10% participation (245/2520 invited)
  - Will paramedics seek out education in areas they feel deficient in?

# Pediatric Skill Retention

- **Lammers 2009**

- 212 licensed Michigan Paramedics (91% of eligible paramedics in the region) tested in clinical assessment modules

- Cardiac arrest

- 18% no BVM w/in 60sec
- 51% no chest compressions w/in 60sec
- 96% did not set up suction
- 58% incorrect ET size

- Asthma

- 47% did not correct ET size
- 49% incorrect depth
- 84% did not confirm tube placement other than auscultation
- 45% did not secure ET tube



# How have we done historically?



# A walk through the literature

- **Milwaukee County** (Losek 1989)
  - 1 year retrospective study < 19 yo intubations over 1 year
  - 63 attempts
  - **78% success**
    - **46% failure on <18 mo**
  - Complications: ETT too small (4), accidental extubation (6), esophageal intubation (6)
- **Fresno County** (Aijan 1989)
  - 38 month retrospective study of pediatric (<19 yo) patients with cardiac arrest
  - 63 arrest patients, 28 attempts, **18 successful (64%)**
    - **Major complication rate 7%**
    - **Minor complication rate 39%**
      - 18 intubated patients: 8 died in ED, 9 survive to admission, **1 survived to discharge**

# A walk through the literature

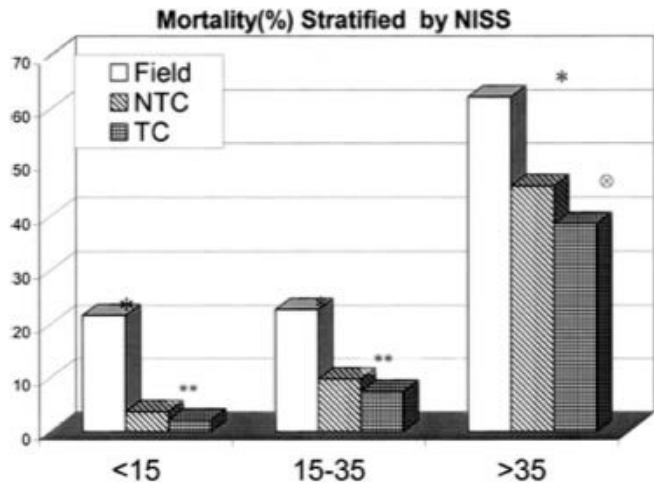
- **Georgia (Boswell 1995)**
  - 6 year retrospective study comparing peds (<15 yo) to adult ETI in patients with GCS <9 brought to TC by HEMS
  - 63 pediatric intubations, **60% success rate**
    - **25 non-ETI ped pts: 20 unsuccessful attempts, 14 were TBI, only 9 needed ETI in ED**
  - **Unsuccessful attempts: pediatrics 34% vs adult 9.8%**
- **King County (Brownstein 1995)**
  - 7 year retrospective review of 355 successfully intubated patients <16
  - **39% incorrect ET size**
  - Incorrect placement: **mainstem 34 (12.6%), esophagus 5 (1.8%)**
  - Overall **complication rate 22.6%; serious complications 10.7%**
  - **33 extubated in ED**
  - Did not look at failed ETT

# A walk through the literature

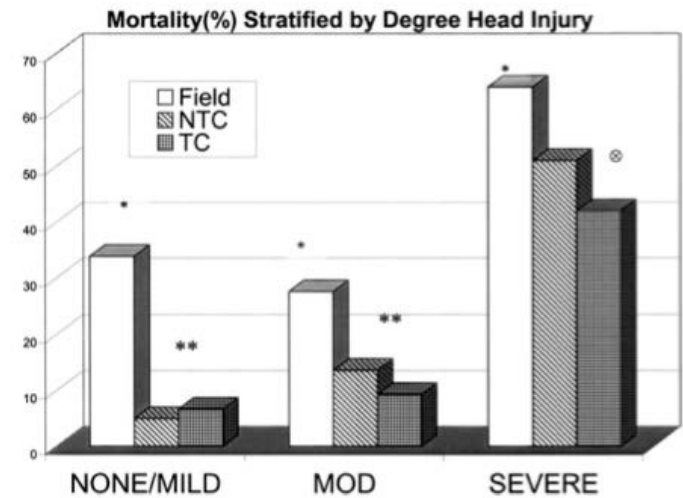
- **Los Angeles and Orange County (Gausche-Hill 2000)**
  - 3 year randomized control trial
  - 830 patients <13 yo BVM vs ETI
  - **No significant difference in survival (30% BVM vs 26% ETI) or neurological outcome (23% BVM vs 20% ETI)**
  - **57.7% success rate**
  - **57.4% complication rate**
    - 3 esophageal intubations, 12 (6%) unrecognized dislodgements: 14/15 of these died
    - 15 (8%) recognized dislodged tube
    - 33 (18%) mainstem
    - 44 (24%) wrong ETT size
- **San Diego County (Vilke 2002)**
  - 4.5 year retrospective review
  - 1158 acute patients < 15 yo- 324 attempted intubations
  - **82% intubated**
    - 3 esophageal (did not look for other complications)

# A walk through the literature

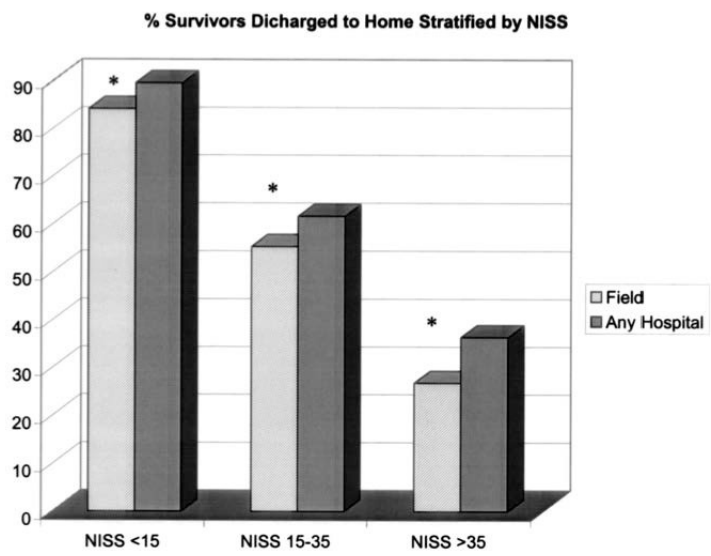
- **West Virginia rural trauma patients** (Ehrlich 2004)
  - 10 year retrospective review
  - 105 (<19yo) : 57% in field (F), 22% transferring hospital (RH), 21% at trauma center (TC)
  - First attempt success: **67% F**, 69% RH, 95% TC
  - **ETI failure rates highest in Field: 50% F**, 0% RH, 0% TC
  - **Airway complications highest in Field: 66% F**, 29% RH, 4% TC
  - **Only 9.3% could not be oxygenated or ventilated with BMV prior to ETI**
- **National Pediatric Trauma Registry** (DiRusso 2005)
  - 8 year database review
  - 50,199 patients: 5,460 (11.6%) intubated
    - 1,930 in field (F), 1,654 in referring hospital (RH), 1,876 trauma center (TC)
    - Mortality rates for intubated patients: **F 38.5%**, RH 16.7%, TC 13.2%
  - **Field intubation is an independent strong negative predictor of survival or good functional outcome despite adjustment for severity of injury**



**Fig. 4.** Percentage mortality stratified by degree injury (NISS) and place of intubation. Field, patients intubated in the field; Hospital,



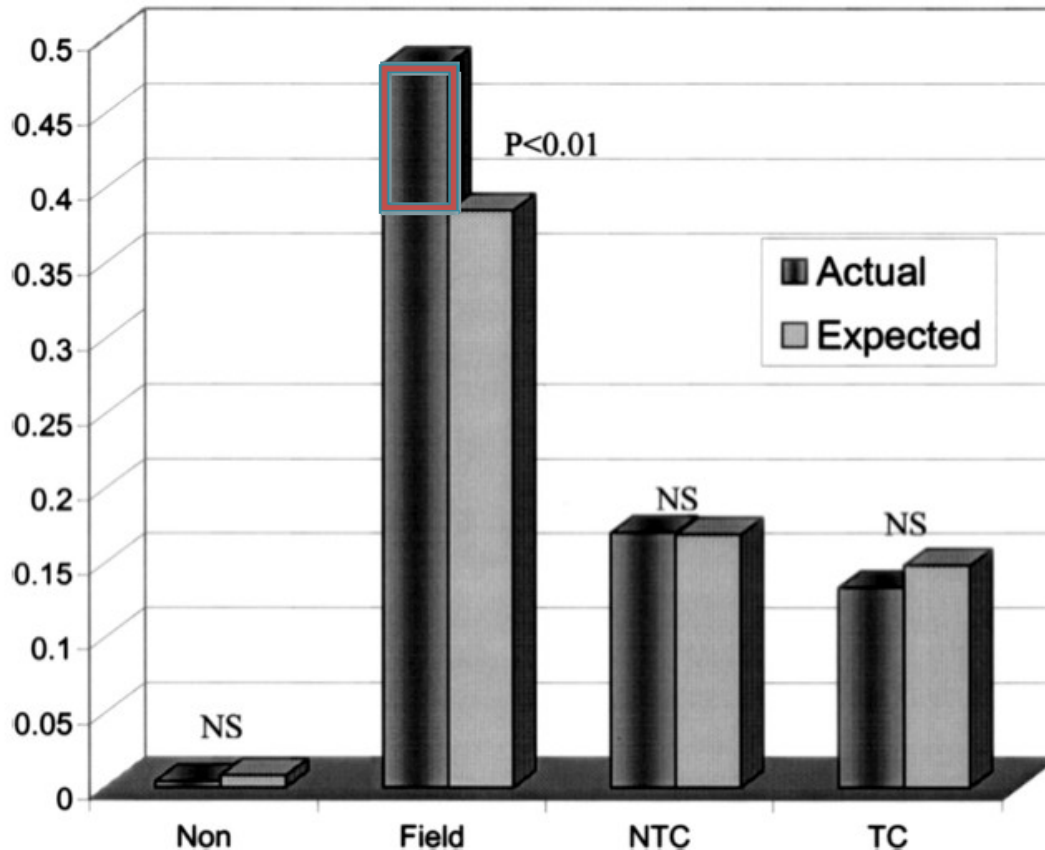
**Fig. 5.** Mortality stratified by degree of head injury (RHISS) and place of intubation. NONE/MILD, no or mild closed head injury



**Fig. 6.** Percentage of survivors discharged to home stratified by injury severity (NISS). Field, patients intubated in the field; Any

Mortality with field ETI of trauma patient is higher regardless of NISS and head injury and survival to DC home is lower.

## Probability of Death



Observed probability of death is higher than expected with field intubations in pediatric trauma patients

**Fig. 3.** Comparison of actual (observed) death rate versus expected death rates by intubation status or place of intubation. Non, patients not intubated; Field, patients intubated in the field; NTC, patients intubated in a non-trauma center hospital; TC, patients intubated at a trauma center; NS, no statistically significant difference between actual and expected.

# A walk through the literature

- **Dutch study (Gerritse 2008)**
  - 5.5 years retrospective review
  - 300 < 16 yo seen by HEMS, 155 received ETI
    - Ground paramedic ETT: 41/95 intubated with GCS 3-4
    - **ETI correction needed by HEMS: 26/41 (63%)**
    - Survival lower if ETI by EMS and lowest if ET tube correction needed
- **King County (Prekker 2016)**
  - 6 year retrospective study
  - 299 ETI
  - **66% 1<sup>st</sup> pass attempt, 97% overall**
  - **25% complication rate**
    - 1 iatrogenic tracheal injury, 6 peri-intubation arrests
    - 12 bradycardia
    - 5 recognized esophageal intubations
    - 16 recognized tube dislodgments; 3 unrecognized
    - 47 mainstem
  - **26 extubated in ED and 2 never needed ETI in ED**

# A Walk through the literature

- **Resuscitation Outcomes Consortium cardiac arrest database (Tijssen 2015)**
  - 7 year retrospective database review
  - 2,244 OHCA (3d-19yo)
  - Improved survival: Shorter scene times, IV/IO attempts, IVF administration
  - **Advanced airways not associated with survival**
- **Cardiac Arrest Registry (CARES) database (Hansen 2017)**
  - 3 year retrospective database review
  - 17 states, 55 cities
  - 1724 < 18 non-traumatic cardiac arrest
    - EMS service who had BMV, ETI, and SGA options
    - 781 (45.3%) BVM; 727 (42.2%) ETI, and 215 (12.5%) SGA
    - 20.7% ROSC, 10.9% hospital discharge
  - **BVM associated with higher survival to hospital discharge compared to ETI and SGA**
    - **Odds ratio survival to discharge**
      - **ETI vs BMV 0.39 (95%CI 0.26-0.59)**
      - **SGA vs BMV 0.32 (95%CI 0.12-0.84)**

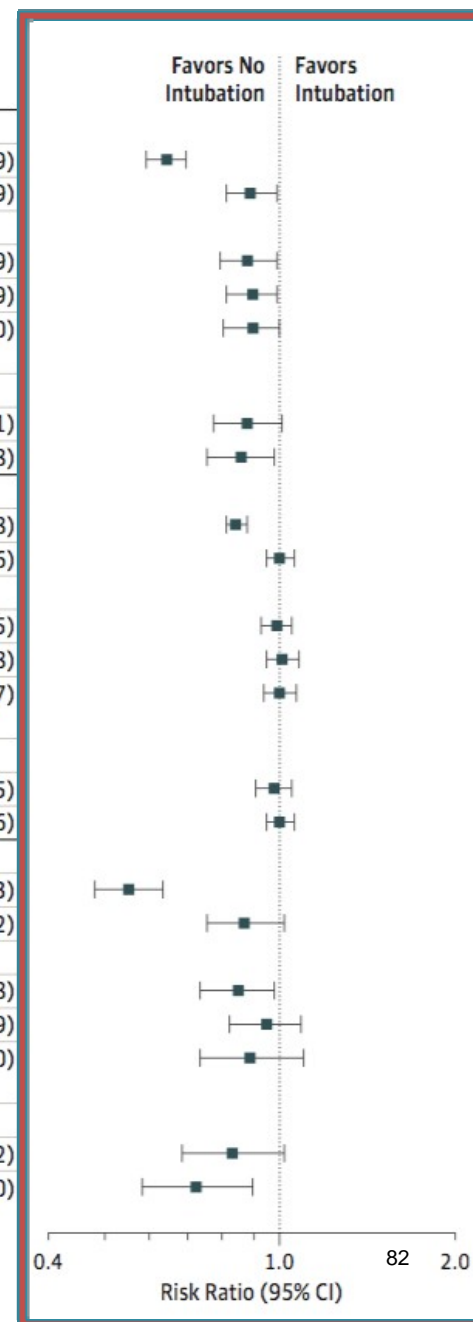



# One last paper

- **“Get with the Guidelines-Resuscitation registration”** (Anderson 2016)
  - 14 year observational study from the <18 yo IN-HOSPITAL cardiac arrest patients
    - 2,294 total cardiac arrest cases, 1555 (68%) intubated
  - Survival was lower in ETI group (36% vs 41%, RR 0.89 95%CI 0.81-0.99)
  - **Among pediatric patients with in-hospital cardiac arrest, ETI during cardiac arrest compared with no ETI was associated with decreased survival to hospital discharge**

**Figure 3. Main and Sensitivity or Secondary Analyses According to Outcome**

	Not Intubated	Intubated	Risk Ratio (95% CI)
	Patients With Events, No./Total (%)	Patients With Events, No./Total (%)	
<b>Survival</b>			
Unadjusted analysis	495/739 (67)	667/1555 (43)	0.64 (0.59-0.69)
Main adjusted analysis	460/1135 (41)	411/1135 (36)	0.89 (0.81-0.99)
Sensitivity analyses			
Imputation of missing data	580/1376 (42)	513/1376 (37)	0.88 (0.79-0.99)
Excluding patients who received CPB	426/1058 (40)	382/1058 (36)	0.90 (0.81-0.99)
Excluding patients who received <2 min of chest compressions	343/881 (39)	307/881 (35)	0.90 (0.80-1.00)
Subgroup analyses			
Patients who were pulseless at any time	288/853 (34)	254/853 (30)	0.88 (0.77-1.01)
Patients with pulse present at initiation of CPR	193/325 (59)	166/325 (51)	0.86 (0.75-0.98)
<b>ROSC</b>			
Unadjusted analysis	636/739 (86)	1130/1555 (73)	0.84 (0.81-0.88)
Main adjusted analysis	771/1135 (68)	770/1135 (68)	1.00 (0.95-1.06)
Sensitivity analyses			
Imputation of missing data	952/1376 (69)	944/1376 (69)	0.99 (0.93-1.05)
Excluding patients who received CPB	690/1058 (65)	698/1058 (66)	1.01 (0.95-1.08)
Excluding patients who received <2 min of chest compressions	590/881 (67)	592/881 (67)	1.00 (0.94-1.07)
Subgroup analyses			
Patients who were pulseless at any time	530/853 (62)	518/853 (61)	0.98 (0.91-1.05)
Patients with pulse present at initiation of CPR	281/325 (86)	282/325 (87)	1.00 (0.95-1.06)
<b>Favorable neurologic outcome</b>			
Unadjusted analysis	244/563 (43)	313/1318 (24)	0.55 (0.48-0.63)
Main adjusted analysis	211/983 (21)	185/987 (19)	0.87 (0.75-1.02)
Sensitivity analyses			
Imputation of missing data	351/1376 (26)	298/1376 (22)	0.85 (0.73-0.98)
Excluding patients who received CPB	178/899 (20)	173/923 (19)	0.95 (0.82-1.09)
Excluding patients who received <2 min of chest compressions	154/762 (20)	139/769 (18)	0.89 (0.73-1.10)
Subgroup analyses			
Patients who were pulseless at any time	132/758 (17)	111/768 (14)	0.83 (0.68-1.02)
Patients with pulse present at initiation of CPR	107/254 (42)	79/260 (30)	0.72 (0.58-0.90)





**Wait a second... let's take a  
second look at that literature**

# Cardiac arrest

- **Prehospital**

- Advanced airways not associated with survival (Tijssen)
- BVM associated with higher survival to hospital discharge compared to ETI and SGA (Hansen 2017)

- **In hospital**

- Among pediatric patients with in-hospital cardiac arrest, ETI during cardiac arrest compared with no ETI was associated with decreased survival to hospital discharge (Andersen 2016)

# Trauma


- “Airway protocols clearly need to emphasize BVM in children until transfer to trauma center, especially if provider adequately establishes oxygenation and ventilation” (Ehrlich 2004)
- “Field intubation is an independent strong negative predictor of survival or good functional outcome despite adjustment for severity of injury” (DiRusso 2005)

# Interesting Piece...

- Throughout literature, numerous cases that ended up not requiring ETI in ED, were extubated on arrival, and/or were discharged home
- Pediatric status epilepticus
  - Best to perform BVM while antiepileptic stops seizure
- Are there prehospital ETI occurring that do not deserve the risk of ETI?

# What happens if you remove cardiac arrest, trauma, and seizures as indications for Peds ETI?

- 1989 Losek: 63 --> **6 in 1 year**
- 1995 Brownstein: 355 --> **~154 over 7 years**
- 2000 Gausche-Hill: 415 (ETI group)--> **28 over 3 years**
- 2002 Vilke: 264 --> **44 in 4.5 years**
- 2004 Ehrlich: 105 --> **20 in 10 years**
- 2016 Prekker: 299 ETT --> **50 over 6 years**
  
- **Roughly 10 pediatric ETI/Year in a system**



**We've thought about the  
patient, but what about the  
paramedics?**





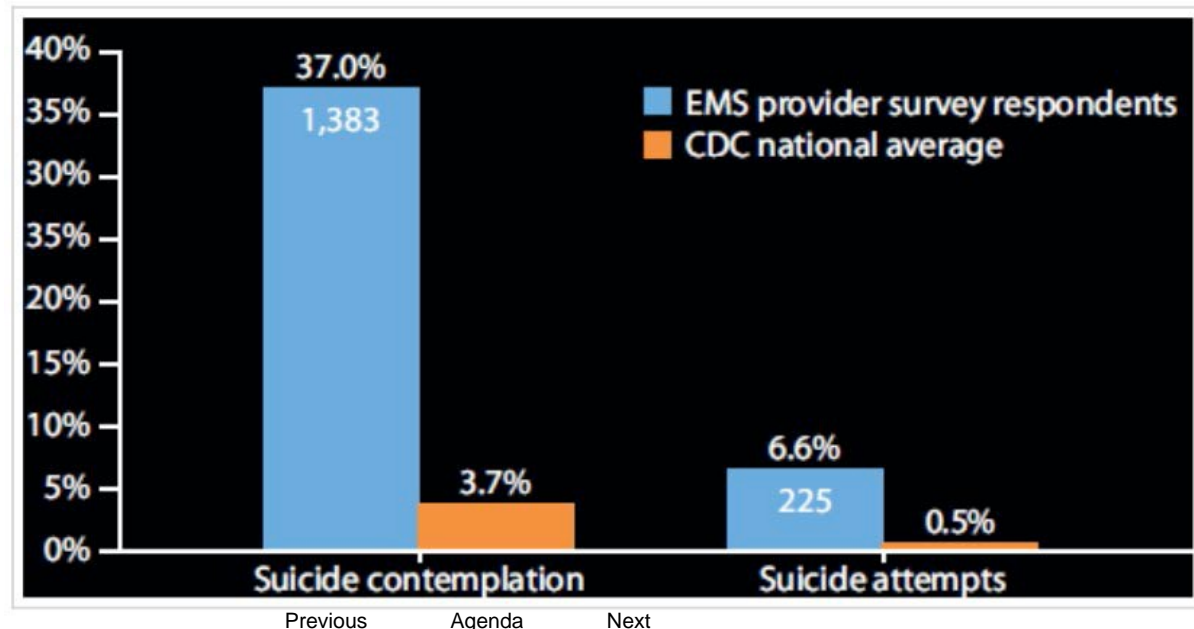


**How does the failed pediatric ETI or ETI with major complications affect paramedic mental health?**

“Many people often ask me: “You're a paramedic, **what's the worst thing you've ever seen?**” This question always sends shivers down my spine because I'm afraid of what memories might come up. My answer is never: ‘When I witnessed a man blow his head off with a shot gun’ or ‘**attempting to resuscitate a baby after a car accident**’. Instead, I avoid every possibility to talk about those things and just provide a case that does not want to make me run in the opposite direction.”

# Paramedic Mental Health

- Very real issue
- Increased PTSD rates
- Increased suicide thoughts and attempts



# California EMSC Technical Advisory Committee Recommendations

- **Unanimous agreement among TAC members to discontinue prehospital pediatric ETI**
  - Low frequency
  - High complication rate
  - Significant mental stress from poor outcomes

# Pediatric ETI Conclusions

- Initial competency and maintenance difficult
- Very low frequency
- High complication rates
- May decrease survival in cardiac arrest and trauma
- Are there unnecessary ETI occurring prehospital?
- High stakes case for paramedics
- ...
- Do the risks outweigh the benefits?
  - Should we focus on the basics... oxygenation, ventilation and perfusion?

# References

- Wang HE, Reitz SR, Hostler D, Yealy DM. Defining the Learning Curve for Paramedic Student Endotracheal Intubation. *Prehosp Emerg Care*. 2009;9(2):156–162. doi:10.1016/S0196-0644(03)00660-7
- Toda J, Toda AA, Arakawa J. Learning curve for paramedic endotracheal intubation and complications. *Int J Emerg Med*. 2013;6(1):38. doi:10.1186/1865-1380-6-38
- Ruetzler K, Roessler B, Potura L, et al. Performance and skill retention of intubation by paramedics using seven different airway devices--a manikin study. *Resuscitation*. 2011;82(5):593–597. doi:10.1016/j.resuscitation.2011.01.008.
- Youngquist ST, Henderson DP, Gausche-Hill M, Goodrich SM, Poore PD, Lewis RJ. Paramedic Self-efficacy and Skill Retention in Pediatric Airway Management. *Academic Emergency Medicine*. 2008;15(12):1295–1303. doi:10.1017/S1049023X00040589.
- Lammers RL, Byrwa MJ, Fales WD, Hale RA. Simulation-based Assessment of Paramedic Pediatric Resuscitation Skills. *Prehosp Emerg Care*. 2009;13(3):345–356. doi:10.1080/0142159031000100274.
- Losek JD, Bonadio WA, Walsh-Kelly C, Hennes H, Smith DS, Glaeser PW. Prehospital pediatric endotracheal intubation performance review. *Pediatric Emergency Care*. 1989;5(1):1–4.
- Aijian P, Tsai A, Knopp R, Kallsen GW. Endotracheal intubation of pediatric patients by paramedics. *YMEM*. 1989;18(5):489–494.
- Boswell WC, McElveen N, Sharp M, Boyd CR, Frantz EI. Analysis of prehospital pediatric and adult intubation. *Air Med J*. 1995;14(3):125–7–discussion 127–8.

# References continued

- Brownstein D, Shugerman R, Cummings P, Rivara F, Copass M. Prehospital endotracheal intubation of children by paramedics. *YMEM*. 1996;28(1):34–39.
- Gausche M, Lewis RJ, Stratton SJ, et al. Effect of out-of-hospital pediatric endotracheal intubation on survival and neurological outcome: a controlled clinical trial. *JAMA*. 2000;283(6):783–790.
- Vilke GM, Steen PJ, Smith AM, Chan TC. Out-of-hospital pediatric intubation by paramedics: the San Diego experience. *The Journal of Emergency Medicine*. 2002;22(1):71–74.
- Ehrlich PF, Seidman PS, Atallah O, Haque A, Helmkamp J. Endotracheal intubations in rural pediatric trauma patients. *Journal of Pediatric Surgery*. 2004;39(9):1376–1380. doi:10.1016/j.jpedsurg.2004.05.010.
- DiRusso SM, Sullivan T, Risucci D, Nealon P, Slim M. Intubation of Pediatric Trauma Patients in the Field: Predictor of Negative Outcome Despite Risk Stratification. *The Journal of Trauma: Injury, Infection, and Critical Care*. 2005;59(1):84–91. doi:10.1097/01.TA.0000171462.28379.F3.
- Gerritse BM, Draaisma JMT, Schalkwijk A, van Grunsven PM, Scheffer GJ. Should EMS-paramedics perform paediatric tracheal intubation in the field? *Resuscitation*. 2008;79(2):225–229. doi:10.1016/j.resuscitation.2008.05.016.



# References Continued

- Prekker ME, Delgado F, Shin J, et al. Pediatric Intubation by Paramedics in a Large Emergency Medical Services System: Process, Challenges, and Outcomes. *Annals of Emergency Medicine*. 2016;67(1):20–29.e24.  
doi:10.1016/j.annemergmed.2015.07.021.
- Tijssen JA, Prince DK, Morrison LJ, et al. Resuscitation. *Resuscitation*. 2015;94:1–7.  
doi:10.1016/j.resuscitation.2015.06.012.
- Hansen ML, Lin A, Eriksson C, et al. Accepted Manuscript. *Resuscitation*. September 2017:1–23.  
doi:10.1016/j.resuscitation.2017.08.015.
- Andersen LW, Raymond TT, Berg RA, et al. Association Between Tracheal Intubation During Pediatric In-Hospital Cardiac Arrest and Survival. *JAMA*. 2016;316(17):1786.  
doi:10.1001/jama.2016.14486.

**EMERGENCY MEDICAL SERVICES AUTHORITY**

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**DATE:** September 19, 2017

**TO:** Local EMS Agency Medical Directors  
Local EMS Agency Administrators

**FROM:** Howard Backer, MD, MPH, FACEP  
Director

**SUBJECT:** Phase Out of Pediatric Endotracheal Intubation

A handwritten signature in blue ink, appearing to read 'H. Backer', is written over the 'FROM' field.

At their September 12, 2017 meeting, the Scope of Practice Committee recommended that all California LEMSAs remove pediatric endotracheal intubation from their local optional scope of practice for paramedics and that EMSA remove the practice from our optional scope. This decision followed a comprehensive review of the literature and a lengthy discussion in two Scope of Practice Committee meetings. It was further discussed in the plenary EMDAC meeting where there was general but not unanimous assent. The reason is that pediatric endotracheal intubation is a very low frequency intervention with a high potential for complications and generally negative outcomes compared to less invasive airway interventions. It is extremely difficult for paramedics to maintain this skill. The presentation, developed by J. Joelle Donofrio, DO, on the literature for pediatric intubation is attached.

The Committee did not recommend a firm age cutoff, since the age for transition from childhood to adult anatomy is between 8 and 12 years old. The cut-off will be determined by length—children who fit on a pediatric length-based tape (e.g., Broslow), which corresponds to approximately 40 kilograms.

I concur with the recommendation from the Scope of Practice Committee, and this memo is to notify local EMS agencies that endotracheal intubation for pediatric patients will be removed from the local optional scope of practice for paramedics no later than July 1, 2018.

The July 1, 2018 deadline allows sufficient time for local EMS agencies to revise local EMS protocols, to review alternative available airway devices and methods and provide necessary training to EMS personnel. Alternative advanced airways may include supraglottic airways such as the laryngeal mask airway and the i-Gel airway that are available in pediatric sizes. Since supraglottic airways are not part of the paramedic basic scope of practice, a local optional scope request needs to be submitted to the EMS Authority. A model request is being developed by EMDAC members.

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Local EMS agency protocols may continue the procedure to visualize the airway with a laryngoscope and remove a foreign body with Magill forceps, which is part of the paramedic basic scope of practice.

An exclusion path for flight paramedics and potentially for critical care paramedics will be determined at a later date.

If you have any questions, please contact Sean Trask of my staff by email at [sean.trask@emsa.ca.gov](mailto:sean.trask@emsa.ca.gov) or by phone at (916) 431-3689.