

# Endotracheal Tube Cuff Pressure in the Pediatric Emergency Department

Edward Ferenczy, MD  
Rady Children's Hospital  
Department of Critical Care

Michael Stoner MD, Sandra Spencer MD, DJ Scherzer MD, Samantha Gee MD,  
Joseph Tobias MD  
Nationwide Children's Hospital

# ETT Cuff pressure in the ED

## Overview

- **Question:** How many children who are emergently intubated are exposed to a high pressure in their ETT cuff?
- **Study:** Prospective Cohort study
- **Answer:** a little over half

# ETT Cuff pressure in the ED

What is known?

- Cuff pressure can't be accurately estimated
- High ETT cuff pressure is associated with adverse effects
- Cuffed ETT use is common in children
- Cuffed ETT use is recommended in children

# ETT Cuff pressure in the ED

The question:

- How many children are exposed to a high ETT cuff pressure after emergency intubation?
- Do any factors correlate with a high ETT cuff pressure?

# ETT Cuff Pressure in the ED

## Setting:

- Emergency Department of an urban, tertiary care pediatric hospital
- Level 1 Trauma center
- >100,000 Annual visits

# ETT Cuff Pressure in the ED

## Study Design:

- Prospective cohort
- IRB-approved, informed consent was waived
- 12 months of data collection
- Data collection performed by certified RT's

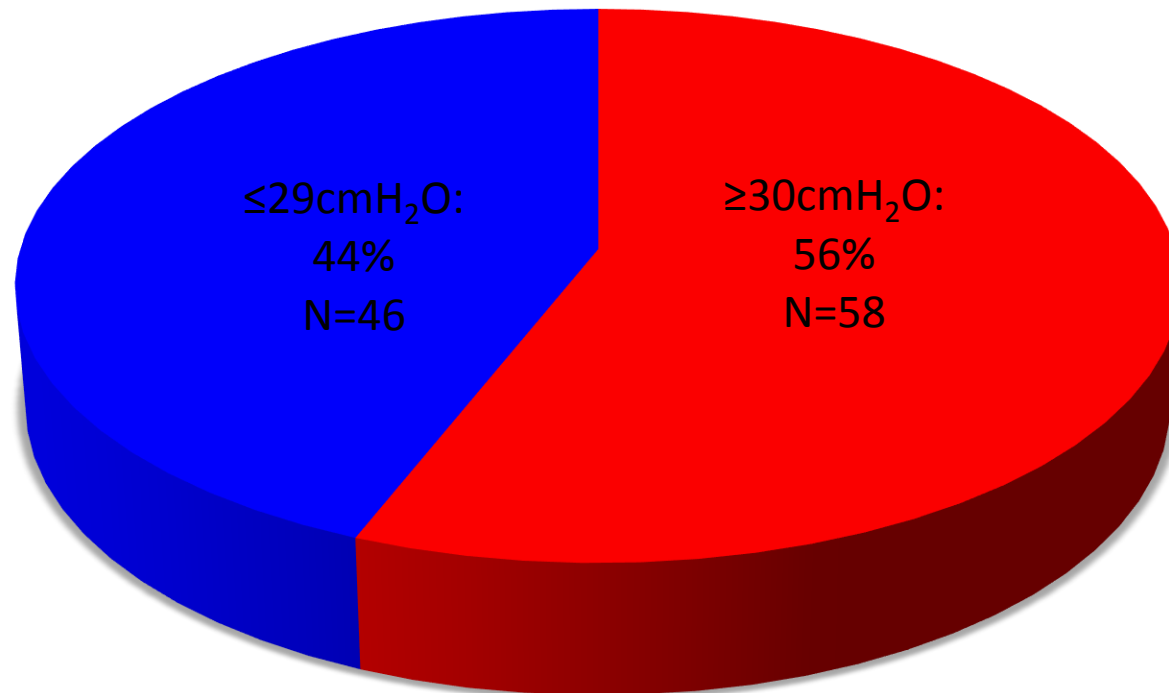
# ETT Cuff Pressure in the ED

## Cohort:

- 104 patients enrolled
- 42 girls and 62 boys
- 10 days to 20 years old
- 2.3kg to 102kg
- 87 intubations in the study institution emergency department, 7 in the field and 10 at outlying hospitals

# Primary Outcome: Cuff Pressure

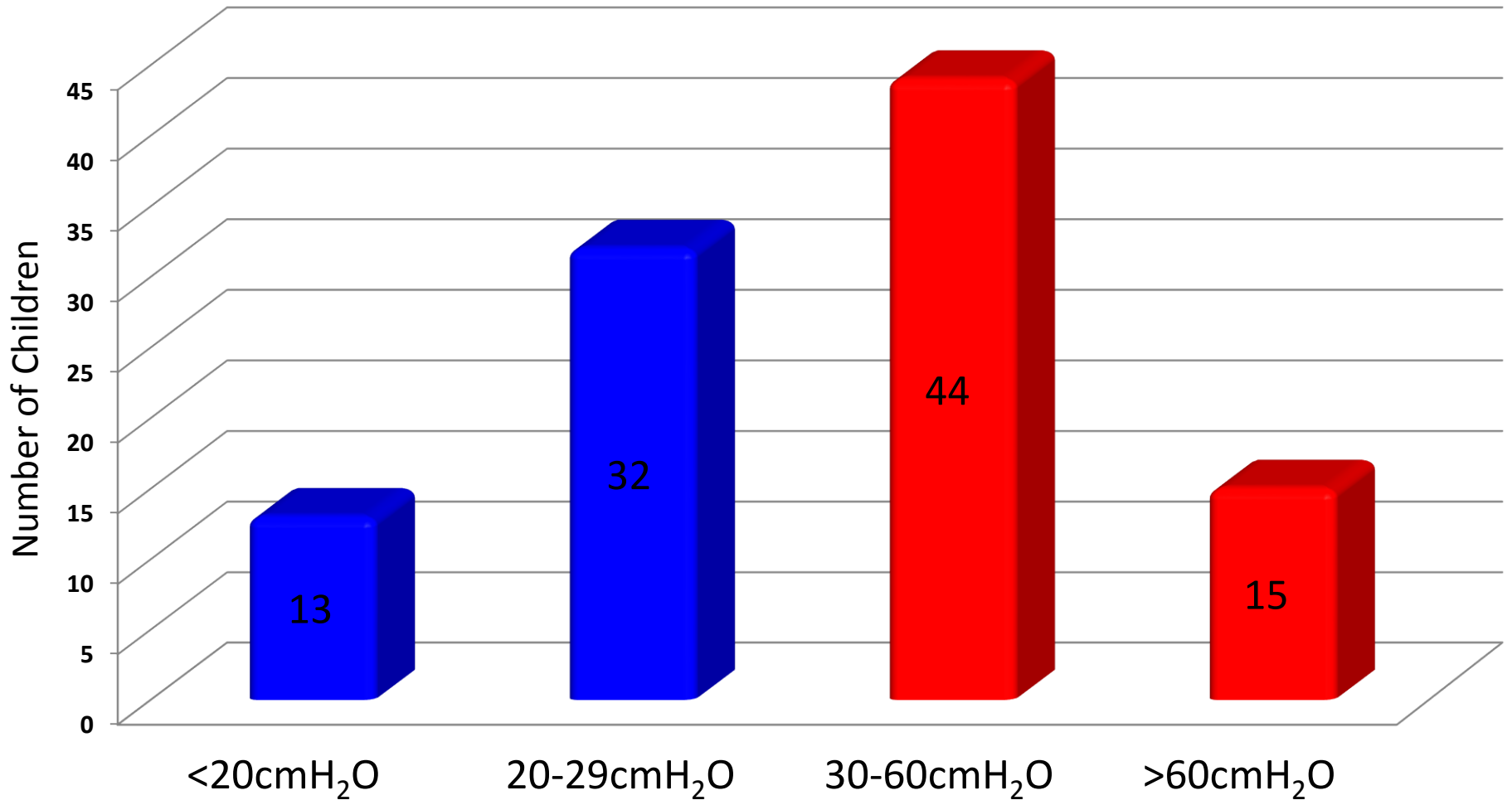
Cuff Pressure in 104 Endotracheally  
Intubated Children





# Primary Outcome: Cuff Pressure

Number of children vs. Cuff pressure groups



# Secondary Outcomes

What was investigated:

- Person performing intubation
- Person performing cuff inflation
- Endotracheal tube size
- Patient age
- Patient gender
- Patient weight
- Diagnostic category (medical or trauma)
- Month & time of day

# Secondary Outcomes

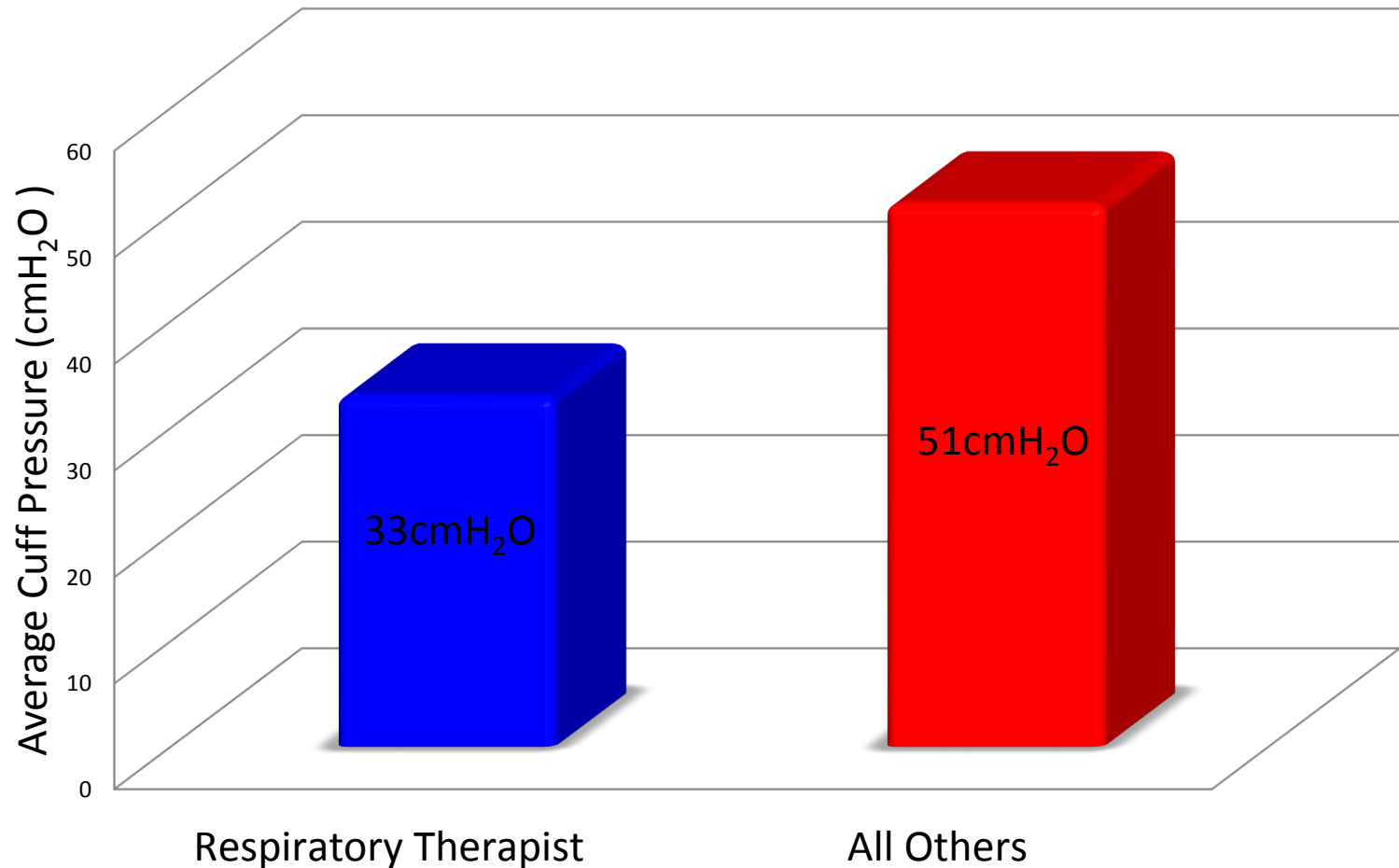
What we found to be statistically significant:

- Person performing intubation
- **Person performing cuff inflation**
- Endotracheal tube size
- **Patient age**
- Patient gender
- **Patient weight**
- Diagnostic category (medical or trauma)
- Month & time of day

# Secondary Outcome: Cuff Inflator

OR 3.12, CI 1.1-8.6, p=0.028

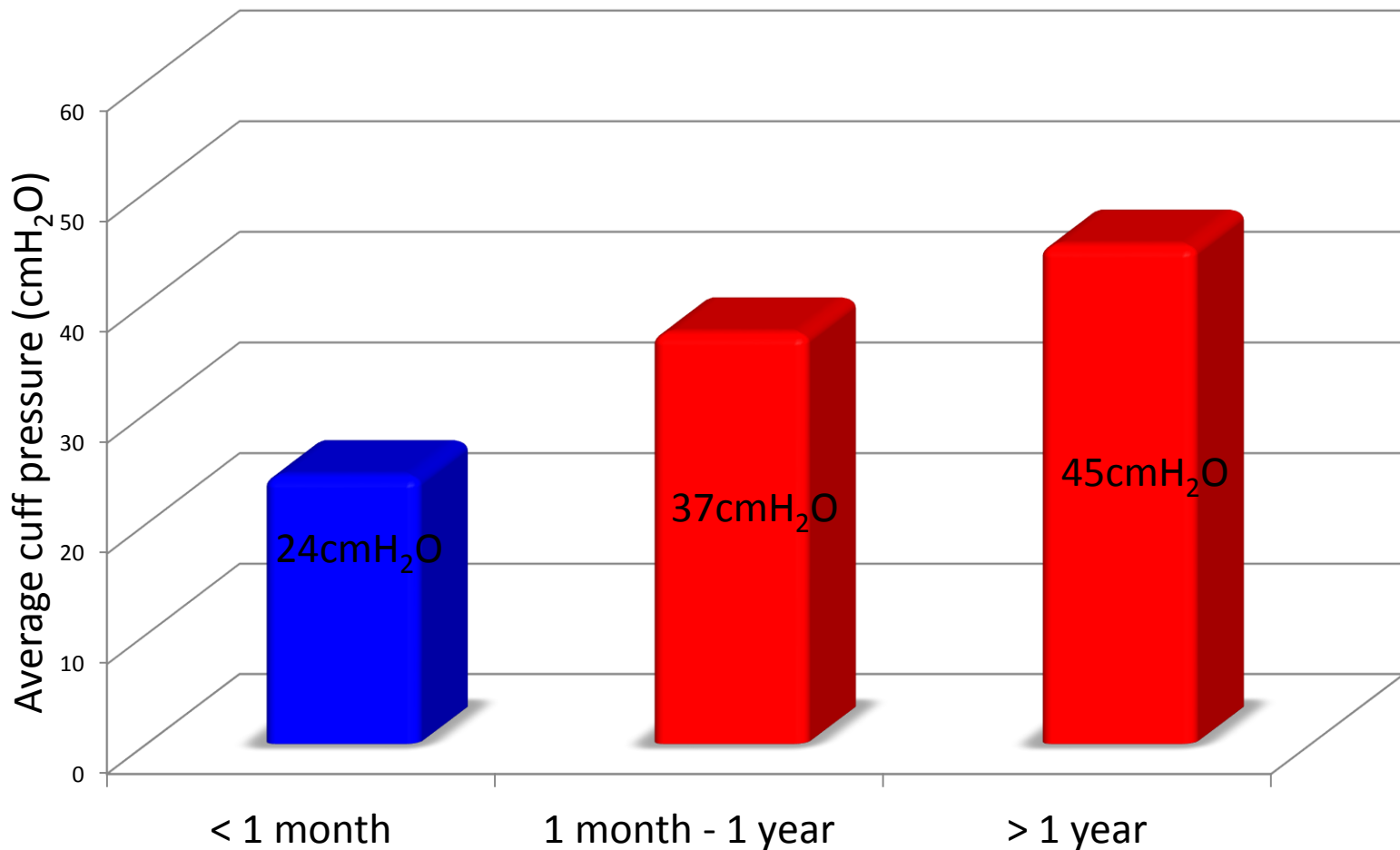
Average pressure vs Cuff Inflator



# Secondary Outcome: Patient Age

OR 2.0, CI 1.3-3.2,  $p=0.002$

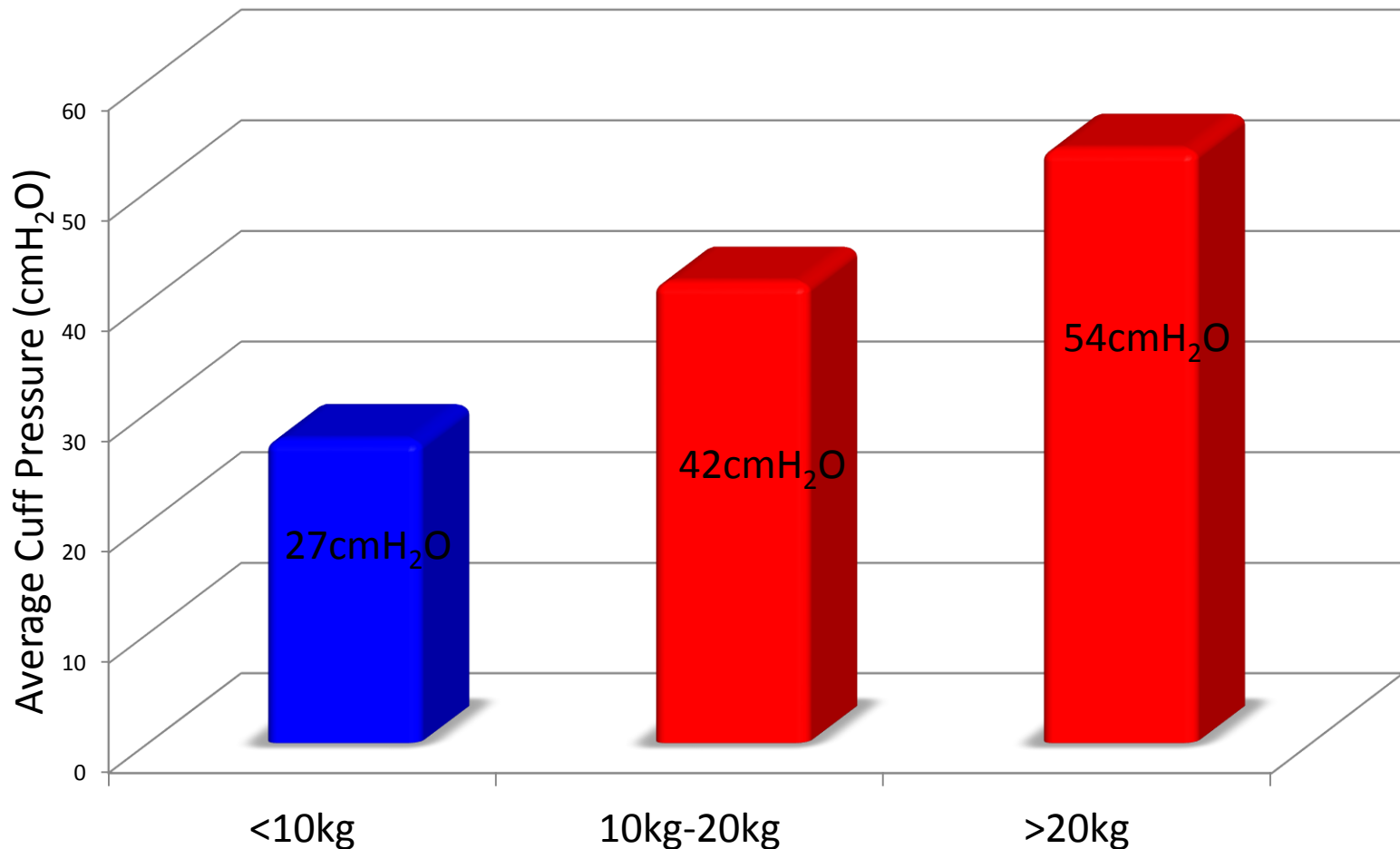
Average cuff pressure vs age group



# Secondary Outcome: Patient Weight

OR 0.9, CI 0.8-0.97,  $p=0.007$

Average Cuff Pressure vs Weight



# ETT Cuff Pressure in the ED

What was learned:

- Emergently intubated children are likely to be exposed to high ETT cuff pressure
- Regular use of a manometer in the ED may help limit exposure to excessive ETT cuff pressure

# ETT Cuff Pressure in the ED

## References:

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# ETT Cuff Pressure in the ED

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Joseph Tobias MD, Anesthesiology and Pain  
medicine (Chair), Pediatric Critical Care, Nationwide  
Children's Hospital