




**CHaMP** 

**Prehospital Provider Attitudes and Beliefs Regarding Pediatric Seizure Management: A Multicenter, Qualitative Study**

Carey JM, Studnek JR, Browne LR, Leirmoe M, Ostermayer DG, Miller TC, Alqusairi D, Grawey T, Schroter S, Lerner EB, Shah MI

**The Charlotte<sup>1</sup>, Houston<sup>2,3</sup>, and Milwaukee<sup>4,5</sup> Prehospital (CHaMP) Research Node**

1  2  3  4  5 

---

---

---

---

---

---

---

---

**HRSA Funding Disclaimer**

- This project is supported in part by the **Health Resources and Services Administration (HRSA)**, Maternal and Child Health Bureau (MCHB), Emergency Medical Services for Children (EMSC) Targeted Issues Grant Program under Grant No. H34MC26201.
- This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

---

---

---

---

---

---

---

---

**Disclosures**

I have no disclosures to report

---

---

---

---

---

---

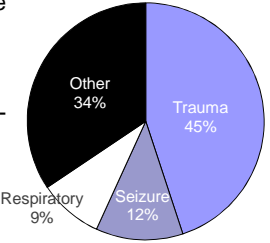
---

---


### Background

Chief Complaint of Pediatric EMS Transports<sup>1</sup>

- Pediatric seizures are common in EMS
- Morbidity/mortality
- Variability in care
- Prehospital evidence-based guidelines (EBGs)



Chief Complaint	Percentage
Trauma	45%
Other	34%
Seizure	12%
Respiratory	9%



1. Richard J. Canadian Journal of Emergency Medicine. 2006

---

---

---

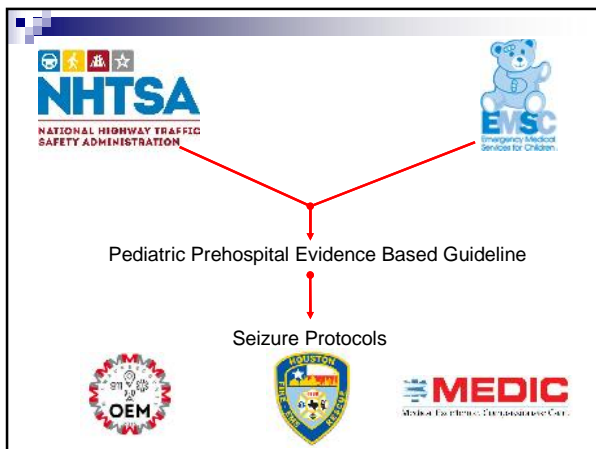
---

---

---

---

---



---

---

---

---

---

---

---

---

### Background

#### Pediatric Seizure Evidence-Based Guideline Recommendations

- Intramuscular (IM) and Intranasal (IN) routes are preferred over IV or rectal routes
- Placing an IV immediately is unnecessary
- Prehospital providers can give 2 doses of benzos prior to contacting online medical control
- Blood glucose should be checked

---

---

---

---

---

---

---

---

### Objective

To identify prehospital provider attitudes and beliefs regarding enablers and barriers to adherence to an evidence-based seizure protocol

---

---

---

---

---

---

---

---

### Methods



- Qualitative study
- Semi-structured interviews of paramedics in 3 EMS systems
- October 2016 to December 2017



---

---

---

---

---

---

---

---

### Methods: Population

- Inclusion Criteria
  - Paramedics who recently (within 2 weeks) transported an actively seizing pediatric patient (age 0-17)
- Three large, urban EMS systems \*\*\*



---

---

---

---

---


---

---

---

### Methods: Data Collection

- 20-30 minute interviews:
  - Semi-structured interview guide
  - Open ended questions
  - 1-on-1 interviews, either paramedic or medical director
- Content
  - Recent case
  - Pediatric seizure management
  - Protocol
- Audio recorded and transcribed




---

---

---

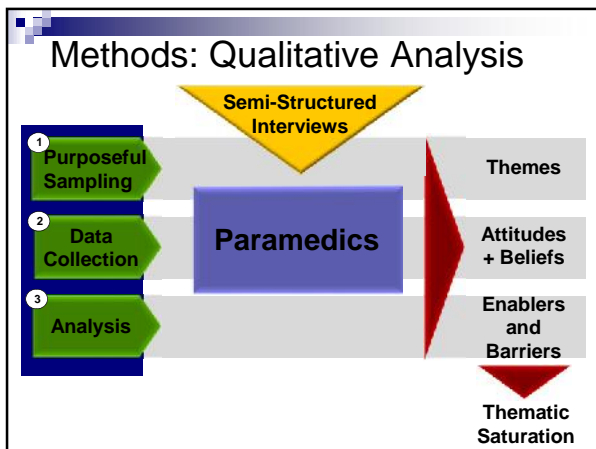
---

---

---

---

---




---

---

---

---

---



---

---

---

### Results

- 30 semi-structured interviews
- Thematic saturation was reached
- Demographics
  - Mean age: 34
  - 87% male
  - Mean of 10 years of EMS experience, 7 with current FMS agency


---

---

---

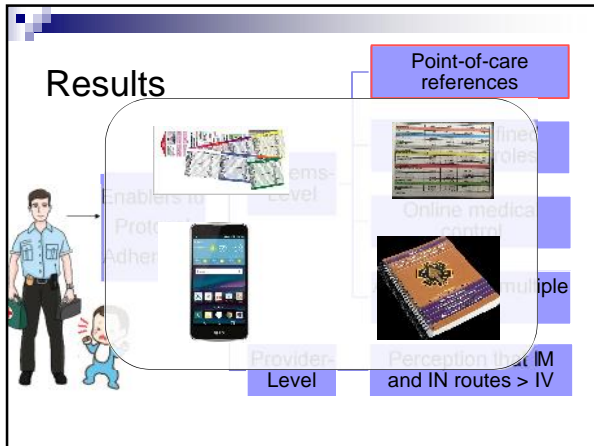
---

---

---

---

---



---

---

---

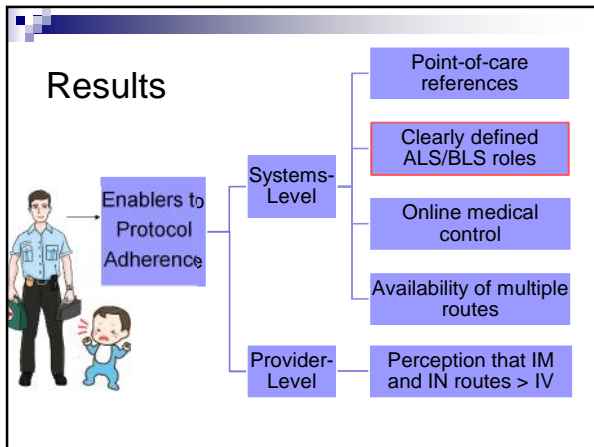
---

---

---

---

---



---

---

---

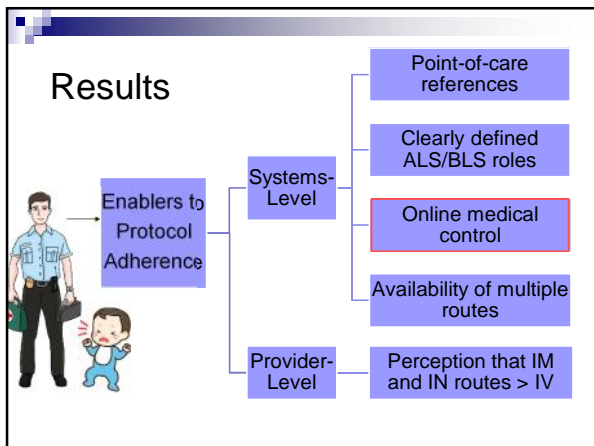
---

---

---

---

---



---

---

---

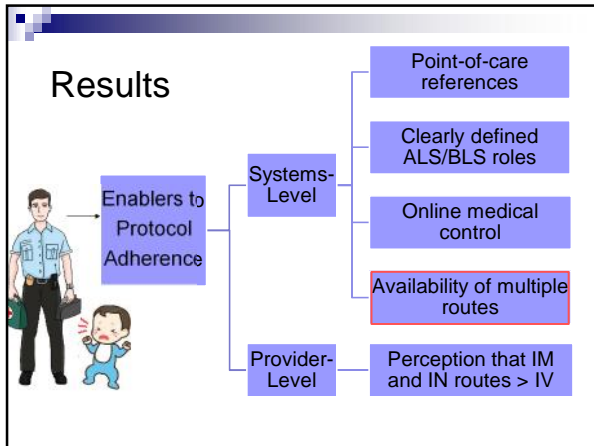
---

---

---

---

---



---

---

---

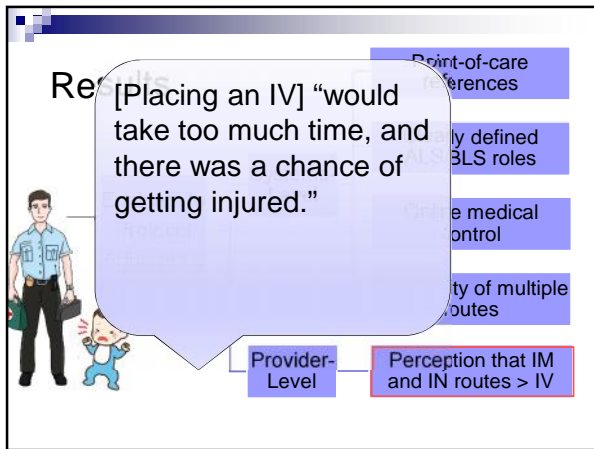
---

---

---

---

---



---

---

---

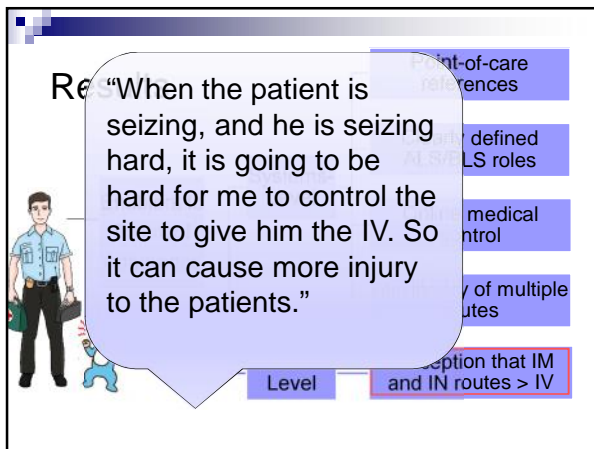
---

---

---

---

---



---

---

---

---

---


---

---

---

**Results**

“Establishing an IV takes time, and sometimes you’re not even able to get it.”



Point-of-care references

defined roles

medical control

of multiple routes

Provider-Level

Perception that IM and IN routes > IV

---

---

---

---


---

---

---

---

**Results**



Barriers to Protocol Adherence

- Provider-Level Barriers
- Environmental/Patient Barriers
- Systems Barriers

Paramedic Solutions

---

---

---

---


---

---

---

---

**Provider-Level Barriers**



“If you take it IM, you might lose some in that fatty tissue. So I prefer IV just because of the full dose, whatever you give, that’s what they’re going to receive. And it’s the fastest acting.”

---

---

---

---

---

---

---

---

### Provider-Level Barriers

“Usually [febrile seizures] stop on their own, and that’s passed down to every paramedic that I’ve known. You’re taught you’ve got to let them have the seizure.”



---

---

---

---

---

---

---

---

### Provider-Level Barriers

“We could have pulled the [length-based] tape and estimated, but I generally think that the mother is going to be more knowledgeable.”



---

---

---

---

---

---

---

---

### Provider-Level Barriers

“Midazolam is like I said, it’s a drug that you don’t want to give too much of. So we try just to be a little more delicate with our dosing.”



---

---

---

---

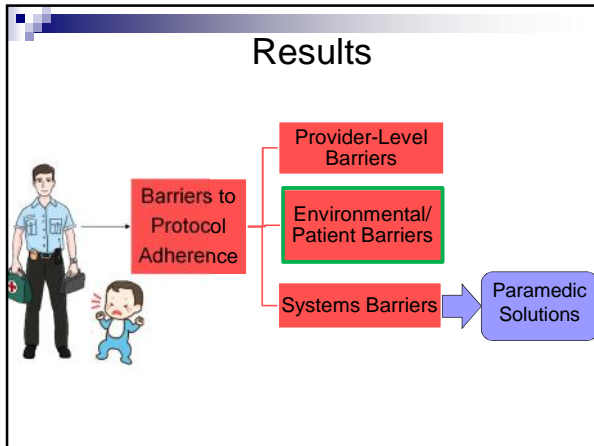
---

---

---

---





---

---

---

---

---

---

---

---



---

---

---

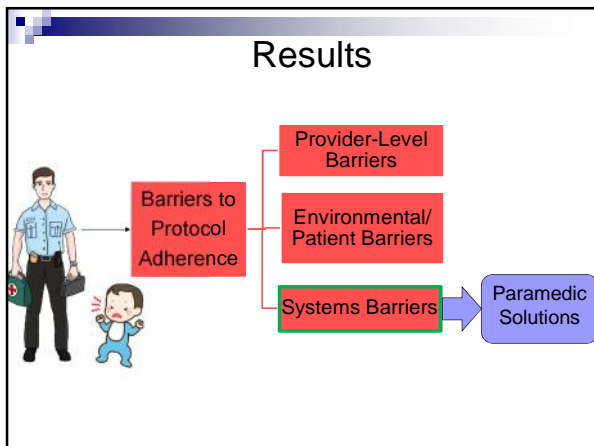
---

---

---

---

---



---

---

---

---

---

---

---

---

**Results**

**Systems Barriers**

- Equipment barriers
- Controlled substance management
- Protocol ambiguity
- Lack of pediatric training

---

---

---

---

---

---

---

---

**Systems Barriers: Equipment**



---

---

---

---

---

---

---

---

**Systems Barriers:**

“The hassle that [paramedics] have to go through, and I mean... the Fire Department... are firing people over these medications... over you not signing one piece of paper or you not turning in a form.”

---

---

---

---

---

---


---

---

**Systems Barriers:**

“We had two different dosages, one for IM, and one for IV, and occasionally I get them confused.”

- Dosing
  - Different
  - Maximum
- Definition
- Focal seizure management



---

---

---

---

---

---


---

---

**Systems Barriers:**

“I feel like there’s a lot of ambiguity associated with why we treat some seizures, but not all seizures, with anticonvulsants”

- Dosing
  - Different
  - Maximum
- Definition
- Focal seizure management



---

---

---

---

---

---

---

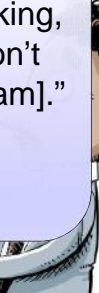
---

**Systems Barriers:**

“I would still treat a focal seizure with medication, ongoing seizure”

“During ...some focal seizure, hand shaking, facial shaking, I don’t consider [midazolam].”

- Focal seizure management



---

---

---

---

---


---

---

---

### Systems Barriers: Lack of Pediatric Training

“You memorize it, but you don’t deal with it every day like you do adults.”



“We need to get more EMS training.”

---

---

---

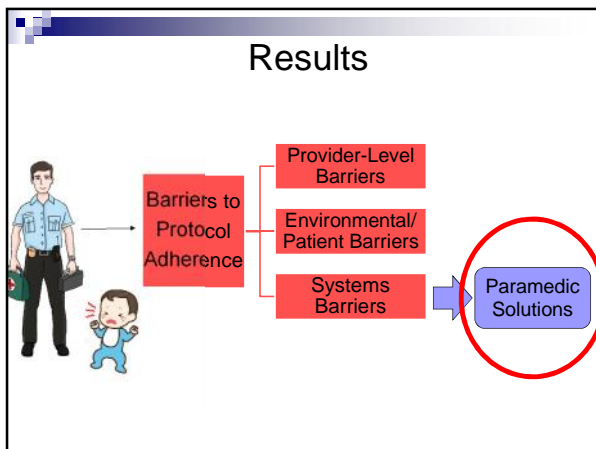
---

---

---

---

---



---

---

---

---

---

---

---

---

- ### Paramedic Solutions
- Simplify dosing among all routes of midazolam
  - Clarify the pediatric maximum dose of midazolam for each route
  - Clarify definition of seizure, specifically addressing less common presentations such as abnormal gaze, rigidity, focality, and multiple brief seizures
  - Clarify treatment of clearly focal seizure

---

---

---

---

---

---

---

---

### Paramedic Solutions

- Carry supply of all necessary pediatric equipment, especially for small infants
- Decrease liability and paperwork associated with use of midazolam
- Provide more pediatric training



---

---

---

---

---


---

---

---

### Limitations

- 3 large, urban based systems
- Generalizability



---

---

---

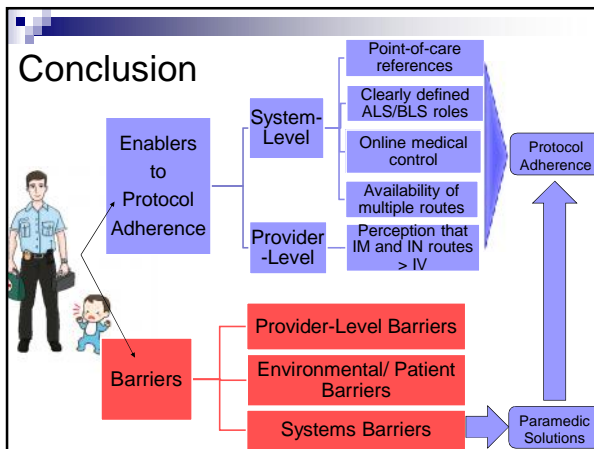
---

---

---

---

---



---

---

---

---

---

---

---

---

## Conclusions

■ Next Steps:

- Use findings to draft new protocols and measure outcomes before and after implementation of new protocols
- Use findings to improve EMS system policies

### For More Information

■ Website: [www.mcw.edu/champ](http://www.mcw.edu/champ)



■ Like us on Facebook:

[www.facebook.com/champernc](https://www.facebook.com/champernc)

□ CHAMP EMS Research Node Center

---

---

---

---

---

---

---

---