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**Patterns of use of non-ambulatory care services in patients with attention-deficit/hyperactivity disorder**

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# Patterns of Use of Non-Ambulatory Services in Pediatric Patients with Attention Deficit/Hyperactivity Disorder

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# Acknowledgements

- Sarah Soden, MD
- Hongying Dai (Daisy), PhD
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- Carla Allan, PhD, Trista Perez-Crawford, PhD and J.C. Cowden, MD

# Conflict of interest

- No conflict of interest to declare

# Background

- ADHD affects 1 out of 11 children (ages 4-17)
- Cost of psychiatric disorders:
  - Limited investigation in children and adolescents.
  - Limited studies on economic burden of ADHD in the US

Visser et al 2014. Parent-Report of Health Care Provider-Diagnosis and Medication Treatment for ADHD: United States, 2003—2011

# Background

- A recent study showed increased cost of healthcare in \$USD for patients with ADHD in United States.
- Hypothesis:
  - Costly non-ambulatory services contribute to this discrepancy

# Objective

- To compare non-ambulatory health care utilization patterns of patients with and without ADHD in a large socioeconomically, racially and geographically diverse population.

# Methods

- Retrospective review of data from Cerner Health Facts ®.
- A total of 190,365 patients with ADHD and 131,473 patients without ADHD who received non-ambulatory care across the United States.
  - Ages 3-19 years
  - Three year period (2014-2016)



# Methods

- 4,000 patients on each group
- Looking at the most expensive aspects of care
- Statistical analysis:
  - Two-sided independent t-tests for continuous variables.
  - Chi-square or Fisher's exact test for categorical variables.

# Demographics

**Table 1. Sample Characteristics (N=8000)**

<b>Gender</b>	<b>No. (%)</b>
<b>Female</b>	3564 (44.6)
<b>Male</b>	<u>4428 (55.4)</u>
<b>*Frequency missing</b>	8 (0.1)

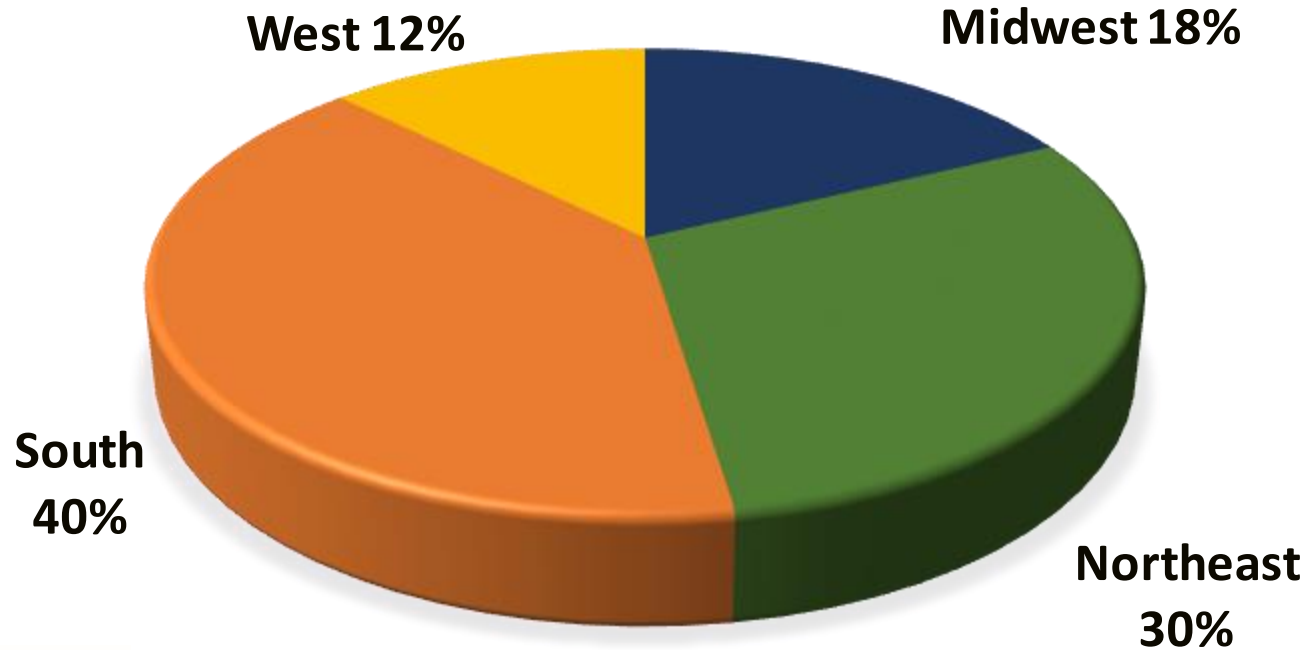
  

<b>Age</b>	
<b>3-6 years</b>	1411(17.6)
<b>7-10 years</b>	1670 (20.8)
<b>11-14 years</b>	1948 (24.3)
<b>15-19 years</b>	<u>2971 (37.1)</u>

# Demographics

Race	NO ADHD (n=4000)	ADHD (n=4000)
White	<b>50.08%</b>	<b>66.33%</b>
African American	30.38%	<b>22.13%</b>
Hispanic	2.20%	0.93%
Native American	1.75%	0.98%
Asian	1.13%	0.30%
Other	14.48%	9.35%

# Distribution per region ADHD group

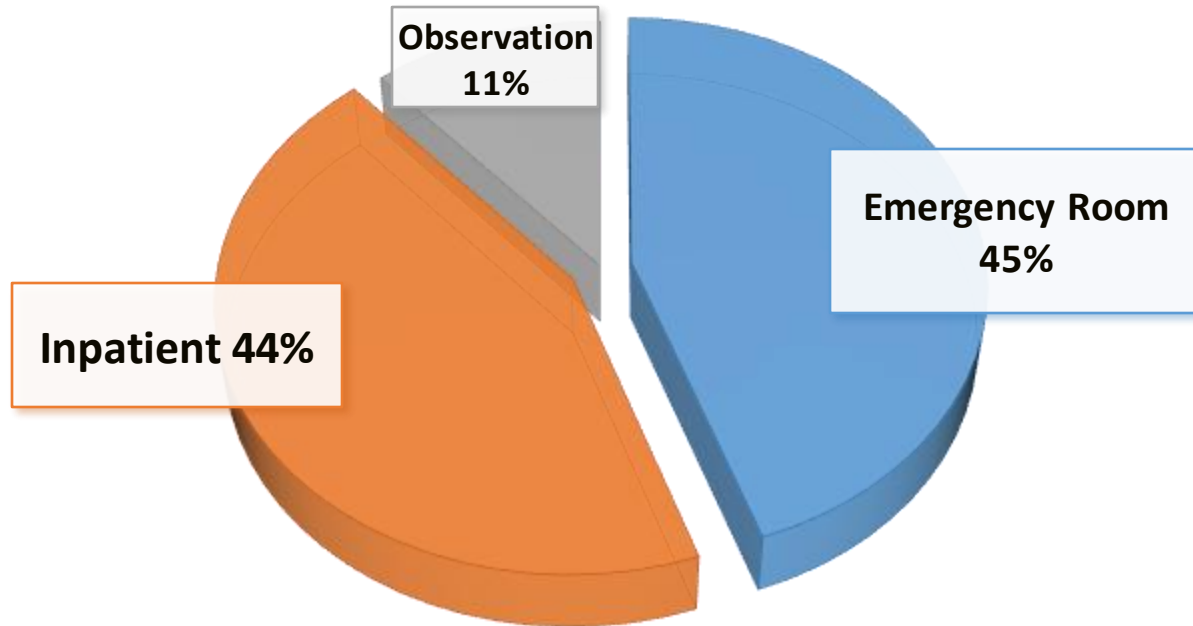


# Results

## Visit type in ADHD group

VISIT TYPE DISTRIBUTION IN ADHD GROUP

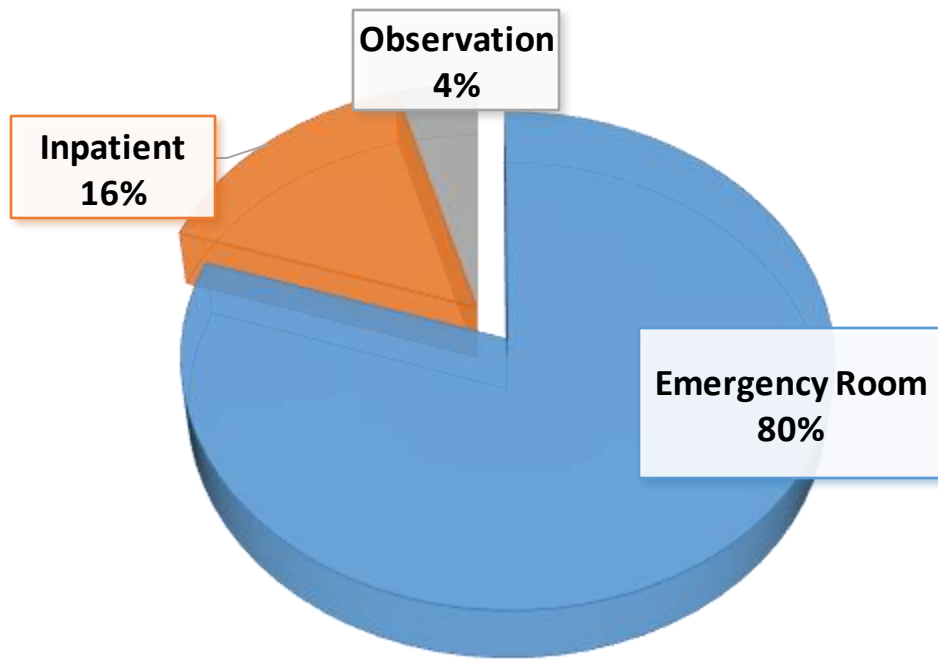
P-value <0.0001



# Results

## Visit type in NO ADHD group

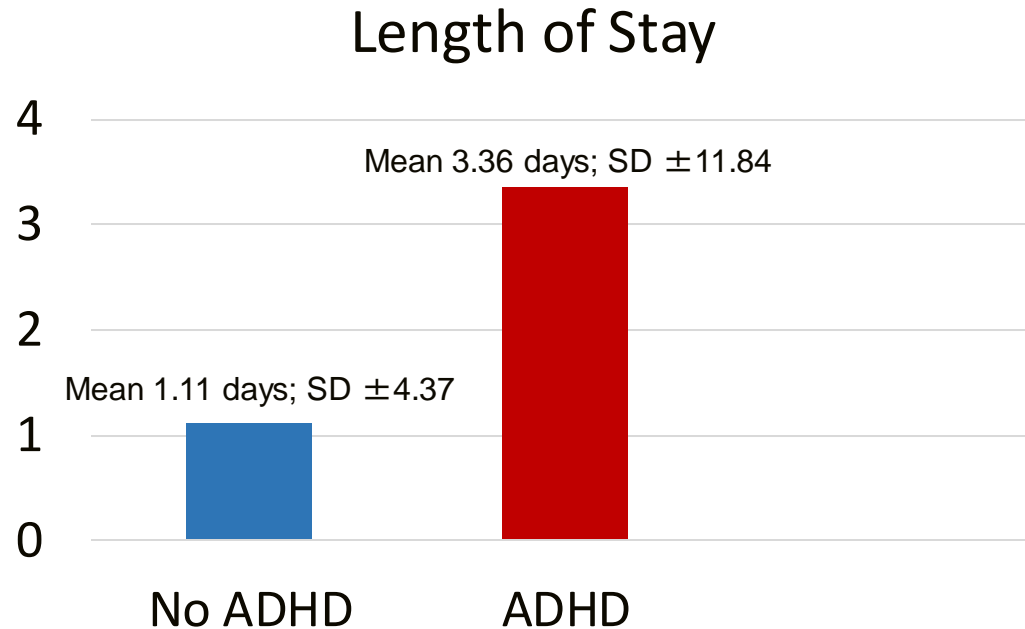
VISIT TYPE DISTRIBUTION NO ADHD GROUP



P-value <0.0001

# Length of stay

P-value <0.0001



# Discussion

- In the ADHD group, non-ambulatory care was disproportionately comprised of high-cost/high-burden care, namely inpatient admissions and observation stays
  - Inpatient admissions: 43.9% vs 15.5% of non-ADHD cases (p<0.0001)
  - LOS was twice as long: 3.36 days vs 1.11 days (p<0.0001)



# Discussion

- Our study suggested that when non-ambulatory care services are used by patients without ADHD :
  - There is increased use of the Emergency room compared to other care
  - ER>Inpatient>observation

# Discussion

- Possible contributor
  - Comorbidities commonly associated with ADHD
- Future directions:
  - Second study looking and variables not listed
  - Compare patients from different settings in database

# Limitations

- All patients used non ambulatory services
- High volume of patients accounts for statistical significance differences
- Variables studied did not include chief complaint or reason for admission
- No further stratification according to concomitant diagnoses

# Conclusion

- Non-ambulatory care use by children with ADHD is likely to be the high cost services; patients are likely to be admitted and stay longer in the hospital