

2019 Annual Report



Children's
of Alabama®



REGIONAL
Poison
CONTROL CENTER®

About the RPCC

The Regional Poison Control Center (RPCC) has been a long-term commitment of Children's of Alabama to the citizenry of Alabama since 1958. The RPCC was the 14th center established in the United States, during a time period when serious morbidity and mortality were attributed to poison ingestion in children and adults. Since its inception, the center engaged in providing the most accurate and rapid poison information to physicians only in the early years and then to both the professional and general public. The RPCC provides free and confidential lifesaving information 24/7/365. The specialists in poison information (SPIs) who answer the RPCC hotline are nurses and pharmacists trained in toxicology and are nationally certified. The RPCC is a fully accredited poison center by the American Association of Poison Control Centers and serves the entire state of Alabama as the only accredited statewide center as designated by the Alabama Department of Public Health.



POISON
Help **p**™
1-800-222-1222

In 2019 the RPCC handled **108,648** calls.

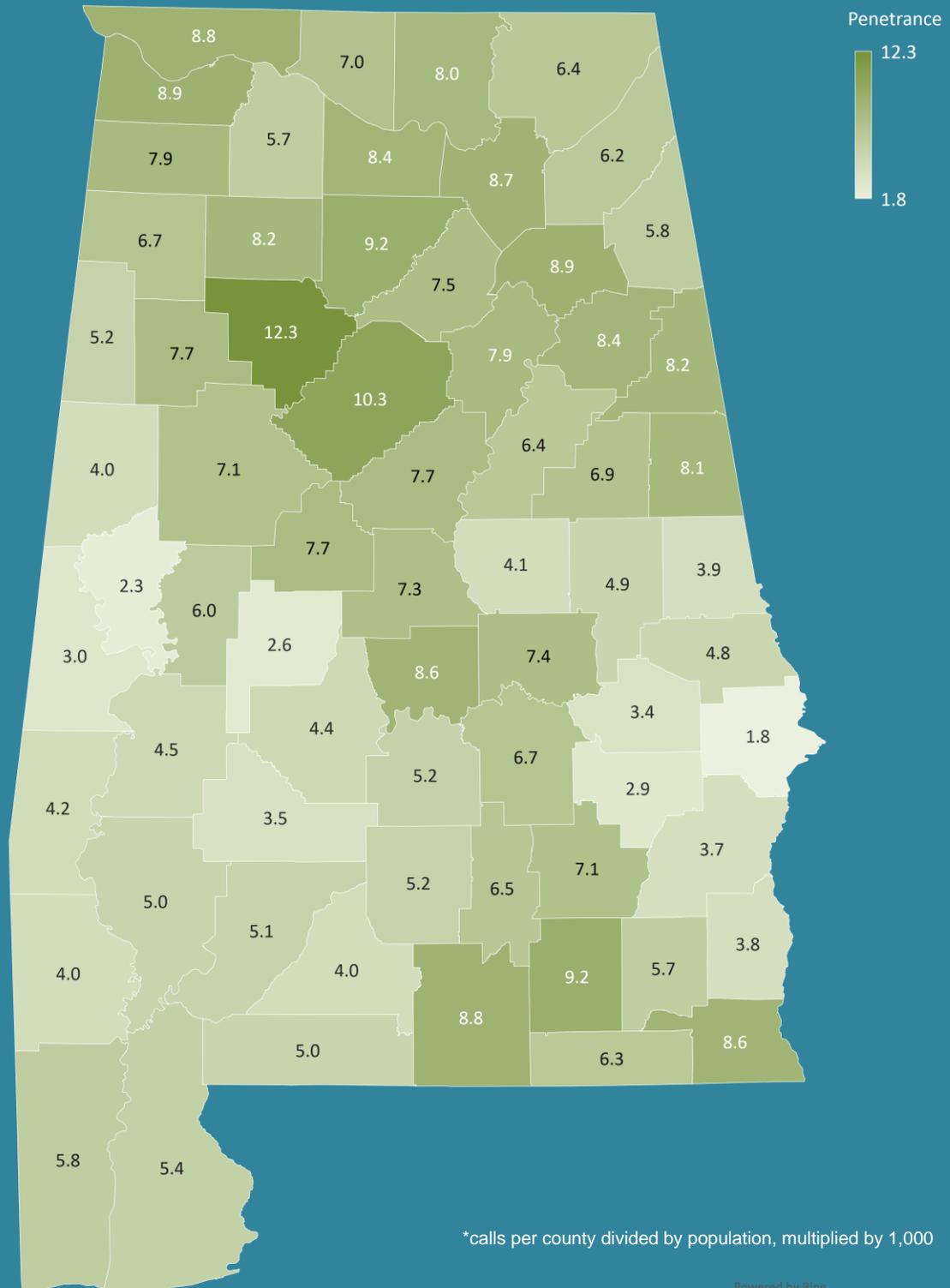
- **52,267** incoming calls resulting in **40,991** cases/charts
 - **35,453** human exposures (multiple calls per case)
 - **3,984** information calls
 - **1,554** animal exposures
- **56,381** follow-up calls

The RPCC monitors **83%** of poison exposure calls from home on-site. In children <6 years old, **>90%** are monitored at home rather than being referred to a healthcare facility.

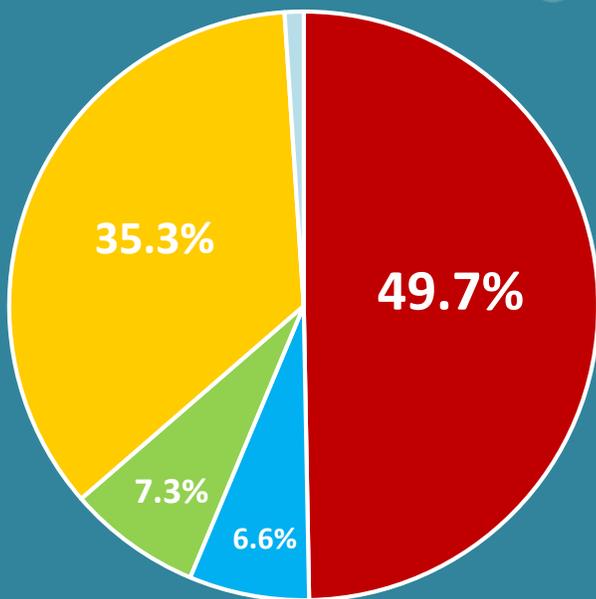
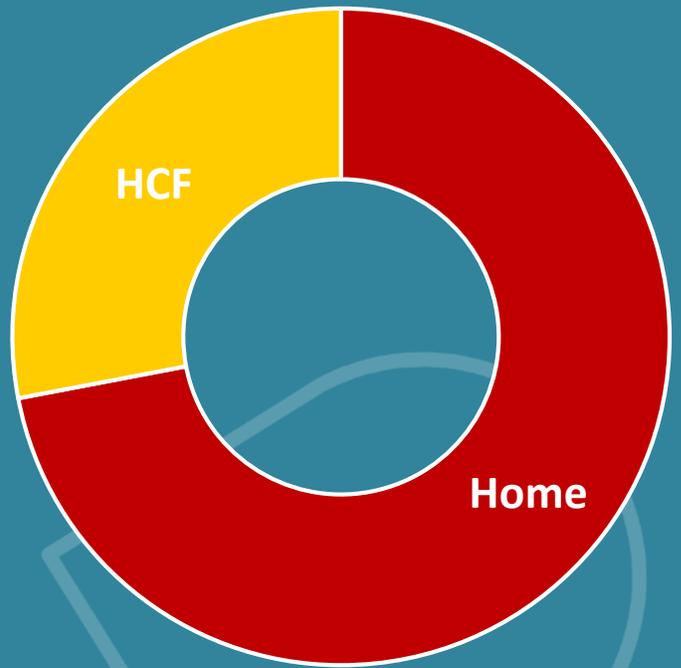
The RPCC is available to patients of all ages. In 2019, we handled calls on patients that ranged from **2 days** to **99 years** old!

According to 1,324 responses to the 2019 RPCC Patient Satisfaction Survey, if the poison center was not available **43%** would have called or visited their primary care physician, **32%** would have gone to the emergency department, **15%** would have called 911, and **10%** would have called another healthcare provider (HCP), friend, or tried to find information on the internet.

Calls per County per 1,000 Residents



72% of the calls made to the RPCC came from patients at home. The remaining **28%** of calls came from doctors, nurses, pharmacists, paramedics, and other health care providers.



Call Volume by Patient Age	
<6 years	17,618
6-12 years	2,339
13-19 years	2,597
>20 years	12,530
Unknown	369

PEDIATRIC IBUPROFEN INGESTION: DO WE NEED TO BE CONCERNED?
Adrian Cohen, MD, Sulfian Hatabak, Brian Vinokuroff, BSN, RN, CDEP, Amy Stacey, DPHN, Mistake Nichols, MD

Introduction
Ibuprofen ingestion accounts for a significant number of exposures of pediatric onset ingested from the Regional Poison Control Center (RPCC). Data from the National Poison Data System (NPDS) indicates that 4% of poisoning exposures are related to ibuprofen ingestion.

Objectives
To evaluate the epidemiology of pediatric ibuprofen ingestions reported to the RPCC by age, intent, amount ingested, clinical effects, and outcome to further inform current levels of ibuprofen ingestion in Alabama as reported to the RPCC.

Methods
A retrospective review of greater than 4000 exposures reported to the RPCC by age, intent, amount ingested, clinical effects, and outcome to further inform current levels of ibuprofen ingestion in Alabama as reported to the RPCC.

Results
In total, 4620 cases were reviewed with 2548 being reported as no effect. There were 1416 cases which were not to be effect. 81% were not to be effect or no toxic effect. When broken by age:
- 81% of children under 6 years old had no effect
- 57% of children aged 6-12 years old had no effect
- 64% of children aged 13-17 had no effect
The single major effect was respiratory distress. The other major effects were gastrointestinal, and all intentional ingestions were asymptomatic less than 24 hours of the time.
Unintentional ingestions had effect 19.2% of exposures.

Table 1. Amount Ingested (g)

Age	All Effects	Major Effect	Minor Effect	No Effect	Total Number
< 5 years	65	13	52	232	442
6-12 years	9	1	8	218	436
13-17 years	19	1	68	138	326
Total Number					

Table 2. Weight-Adjusted Dose Ingested (mg/kg)

Age	All Effects	Major Effect	Minor Effect	No Effect	Total Number
< 5 years	370	133	85.8	586.5	1091.3
6-12 years	370	4.4	3.2	2.2	7.2
13-17 years	370	4.4	3.2	2.2	7.2
Total Number					

Table 3. Symptoms Reported by System

System	All Effects	Major Effect	Minor Effect	No Effect	Total Number
Cardiovascular	22	6	23	2%	53
Central Nervous System	27	6	23	2%	59
Endocrine	0	0	0	0	0
Gastrointestinal	14	1	3	1%	18
Genitourinary	1	0	0	0	1
Hematology	0	0	0	0	0
Immunology	0	0	0	0	0
Integumentary	0	0	0	0	0
Respiratory	1	0	0	0	1
Skin	0	0	0	0	0
Unknown	0	0	0	0	0
Total Number					

Table 4. Age of Symptomatic Patient and Intent

Age	All Effects	Major Effect	Minor Effect	No Effect	Total Number
< 5 years	65	13	52	232	442
6-12 years	9	1	8	218	436
13-17 years	19	1	68	138	326
Total Number					

Table 5. Adverse Reaction

Age	All Effects	Major Effect	Minor Effect	No Effect	Total Number
< 5 years	3	3	2	58	66
6-12 years	1	10	107	1	119
13-17 years	4	10	110	2	126
Total Number					

Conclusions
Ibuprofen remains a relatively safe over-the-counter analgesic for use in the pediatric population. In children ages 6-12 years, intentional ingestions are much more likely to be symptomatic. Most common symptoms are gastrointestinal. It is difficult to draw developmental conclusions from this study as they were not investigated. Symptomatic patients were not hospitalized and none were previously injured and findings consistent with previously reported findings.

A Single Poison Control Center's Characterization of Abuse and Misuse of Gabapentin and Pregabalin 2012-2017

Arnold J^{1,2}, Woodruff M¹, Slattery A¹
¹Regional Poison Control Center at Children's of AL
²University of Alabama at Birmingham

Methods
18-month retrospective review of all cases of intentional or unintentional ingestion of gabapentin or pregabalin from 2012-2017 in adults. Primary outcomes: gender, age, outcomes. Also noted using both intent & cases with associated injuries.

Results
Cases of abuse increased significantly from 2012-2017. Abuse increased significantly from 2012-2017. Abuse increased significantly from 2012-2017.

Conclusions
Cases of abuse increased significantly from 2012-2017. Abuse increased significantly from 2012-2017.

Gabapentin abuse
has been increasing from 2012-2017 while
Pregabalin has not.

PARENTERAL VS ENTERAL N-ACETYLCYSTEINE IN ADOLESCENT ACETAMINOPHEN POISONED PATIENTS

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¹ Office of Medical Toxicology, Department of Emergency Medicine, University of Alabama-Birmingham
² Regional Poison Control Center at Children's of Alabama
³ Department of Emergency Medicine

Background
United States poison centers experience a high rate of adolescent acetaminophen intentional ingestion. Despite IV N-acetylcysteine (NAC) recent entrance to the market, many hospitals continue to use oral NAC due to its favorable cost profile compared to IV formulation. The goal of this study is to evaluate treatment failure rates and administration of NAC compared to the IV formulation in cases presenting to the emergency department with toxic acetaminophen overdose.

Methods
The poison center database was queried for all acetaminophen overdoses in adolescents 12/01/2006 and ending on 12/31/2016. There were 13 adolescent age defined as intentional ingestion. Patients were: 1) polypharmacy 2) nursing or up liver function tests 3) hepatic ED arrival (defined as AST or unknown time of ingestion. Six received administration of NAC 60 mg/kg to a different facility. The study was treatment failure as defined a priori as being either 1) developed fulminant liver failure (ALT > 100 IU/L) or 2) required treatment regimen of NAC. Outcomes: 1) mortality 2) time to treatment.

Results
Over the study period, 255 adolescents were included for intentional acetaminophen overdose. Of these patients, 190 were excluded leaving 45 patients for analysis. Of the 45 included patients, 26 (57.8%) received IV NAC while 19 (42.2%) received oral NAC. The mean age in the cohort was 15.2 years (SD: 1.24). The majority of patients were female (n=37, 82.2%). The baseline acetaminophen level was 183.77 mg/mL (SD: 104.52). Baseline AST and ALT levels were 20.39 IU/L (SD: 8.19) and 18.05 IU/L (SD: 7.90), respectively. Mean time of treatment was 6.83 hours (SD: 4.97). There were no significant differences in the groups receiving IV and PO NAC at baseline.

Table 1: Baseline Characteristics

Variable: Mean (SD)	IV (n=26)	PO (n=19)	Total (n=45)	p
Age (years)	15.19 (1.86)	15.21 (1.62)	15.20 (1.74)	0.9728
Sex				
Male - n (%)	3 (11.5)	5 (26.3)	8 (17.78)	ref
Female - n (%)	23 (88.5)	14 (73.7)	37 (82.22)	0.2091
Initial APAP Concentration (mg/mL)	198.75 (109.15)	163.26 (96.90)	183.77 (104.52)	0.2654
Baseline AST (IU/L)	18.82 (7.44)	22.56 (8.91)	20.39 (8.19)	0.1671
Baseline ALT (IU/L)	18.45 (8.30)	17.5 (7.22)	18.05 (7.90)	0.7184
Time to Treatment (hours)	7.01 (5.26)	6.69 (4.70)	6.87 (4.97)	0.8378
Peak AST (IU/L)	56.12 (125.52)	263.79 (969.69)	147.80 (642.83)	0.2938
Peak ALT (IU/L)	57.84 (136.28)	332.74 (1276.70)	176.55 (843.59)	0.2896

Table 2: Success & Failure Rates for IV vs. PO Administration of NAC

	Success: n (%)	Failure: n (%)	Total: n (%)
IV	22 (84.6)	4 (15.4)	26 (100)
PO	7 (36.8)	12 (63.2)	19 (100)
Total	29 (64.4)	16 (35.6)	45 (100)

Conclusion
In our cohort of adolescents covered by a regional poison center, the oral formulation of N-acetylcysteine was statistically associated with increased treatment failures. Health care practitioners should consider the increased likelihood of failure to complete treatment and development of liver injury when deciding between oral and IV NAC.



The RPCC presented three posters at NACCT 2019 in Nashville.



The RPCC staff participated in 156 hours of community health events and provided public education programs attended by approximately 8,000 Alabamians.

Along with Healthy Child Care of Alabama the RPCC provided 710 training sessions reaching a total of 4,301 Alabamians.

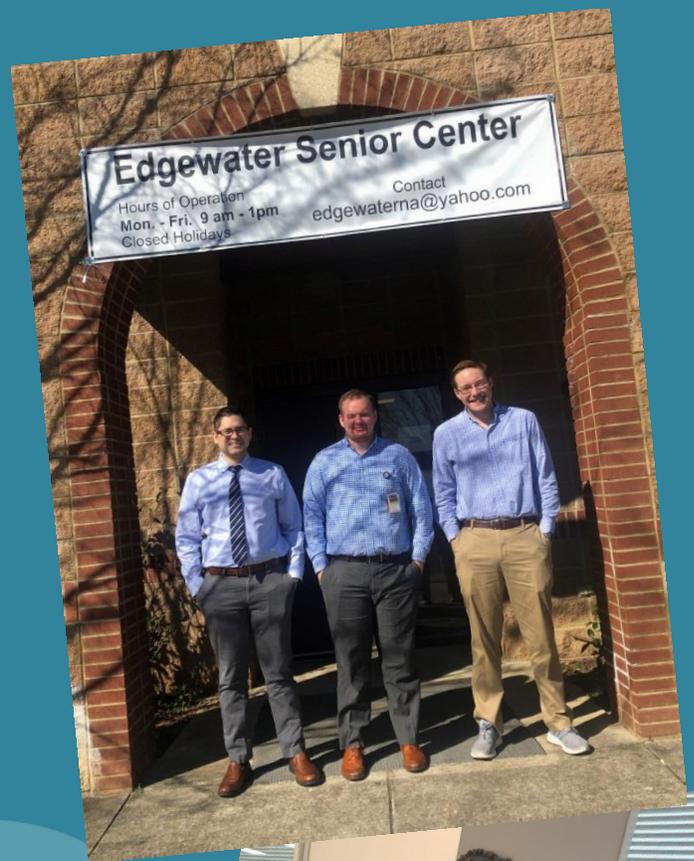


The RPCC hosted 14 PharmD candidates from the Samford University McWhorter School of Pharmacy and the Auburn University Harrison School of Pharmacy in 2019.

Pharmacy students learn about toxic exposures, envenomations, and take poison and drug information calls while on rotation in the Poison Center.

They also presented 7 Adult Medication Safety Programs at local Senior Centers.

The RPCC also hosted 12 UAB residents and 15 medical students.





Alabama's Top 10 Substances seen in Pediatric Exposures

1. Household Cleaning Substances
2. Cosmetics
3. Analgesics
4. Foreign Bodies/Toys
5. Dietary Supplements/Herbals
6. Antihistamines
7. Pesticides
8. Topical Preparations
9. Vitamins
10. GI Preparations

National Top 10 Substances seen in Pediatric Exposures*

1. Cosmetics
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*National data for the year 2018, 2019 data will not be published until 12/2020



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www.ChildrensAL.org/RPCC