

2022 Annual Report



Children's
of Alabama®



ALABAMA
POISON
INFORMATION
CENTER

800-222-1222

About the APIC

The APIC has been a long-term commitment of Children's of Alabama to the citizenry of Alabama since 1958. The APIC 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 has provided the most accurate and rapid poison information, initially to physicians only in the early years and then to both professionals and the general public. The APIC provides free and confidential lifesaving information 24/7/365. The specialists in poison information (SPIs) who answer the APIC hotline are nurses and pharmacists trained in toxicology and are nationally certified. The APIC 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 designated by the Alabama Department of Public Health.



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In **2022** the APIC handled
110,956 calls.

- **52,927** incoming calls resulting in **38,860** cases
 - **34,917** human exposures
 - **2,605** information calls
 - **1,338** animal exposures
- **58,029** follow-up calls

The APIC monitors **>86%** of poison exposure calls from home on-site. In children <6 years old, **92%** are monitored at home rather than being referred to a healthcare facility.

The APIC is available to patients of all ages. In 2022, the Center managed calls on patients that ranged from **3 days** to **100 years** old!

“The nurse I spoke with was very calm which calmed me down and she was extremely sweet and knowledgeable. I'm sure it's standard procedure but she even called me back an hour later to check on my baby and I'm very thankful that she was the one I talked to.”

“The pharmacist I talked to was so knowledgeable, kind, and supportive. She was calm and helpful and reassuring. She definitely made me feel at ease. The [specialist] was extremely nice and helpful. Such an awesome service that you provide.”

“Everyone that handled my issue today did an amazing job with getting back with me and helped me put my mind at ease & making sure my child stayed well. They all seemed very concerned and helpful. Thank you all amazing job.”

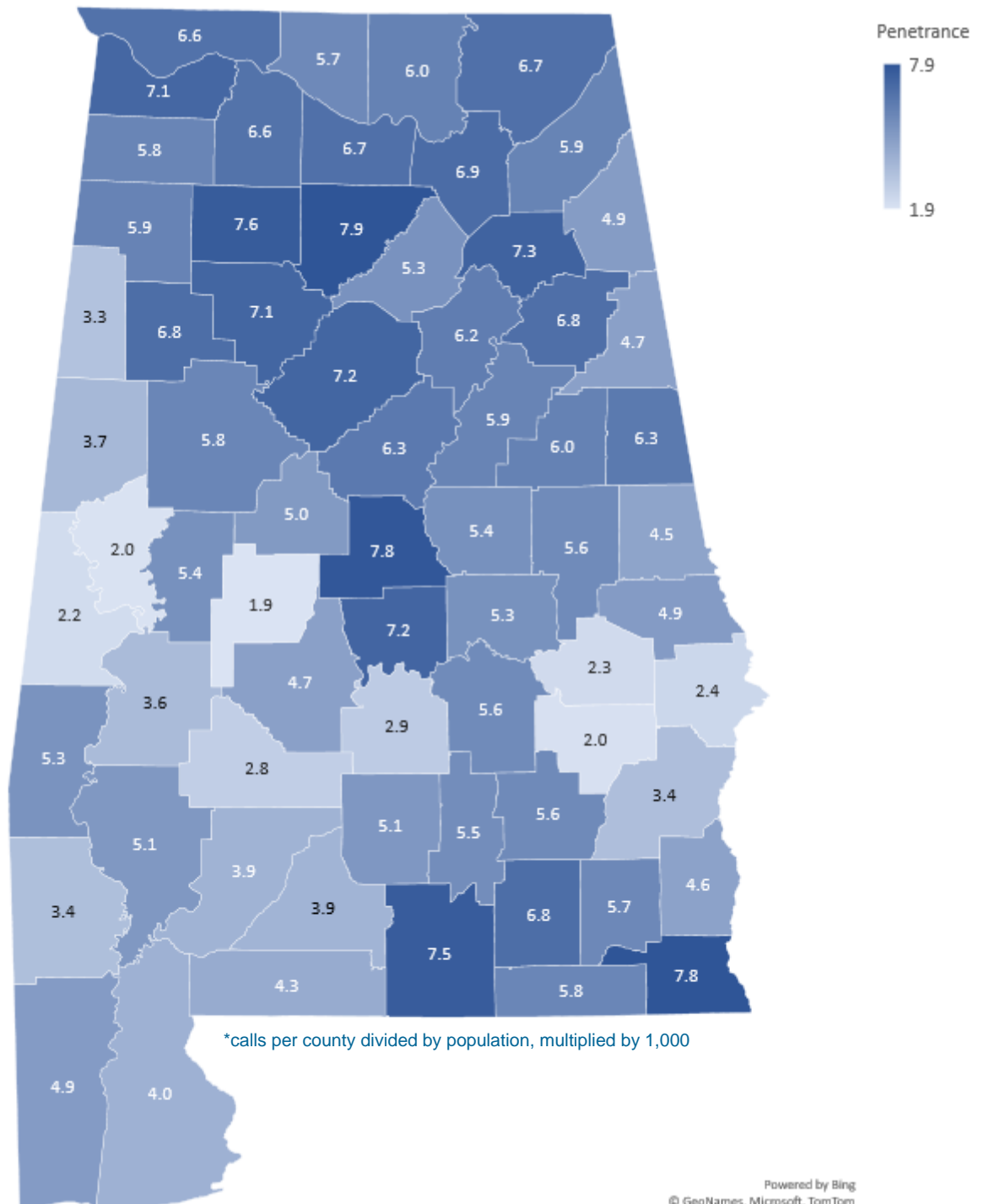
“The nurse was such a big help this evening and help put me at ease after my child had consumed a product for dogs, she was very nice and helped me on what steps to take next and what to look out for. I really appreciate her help this evening and her being so kind.”

“I was given excellent advice from a caring, calm and compassionate person. She followed up with a friendly phone call to check on my child. Could not be more satisfied with the help I received. Thank you.”

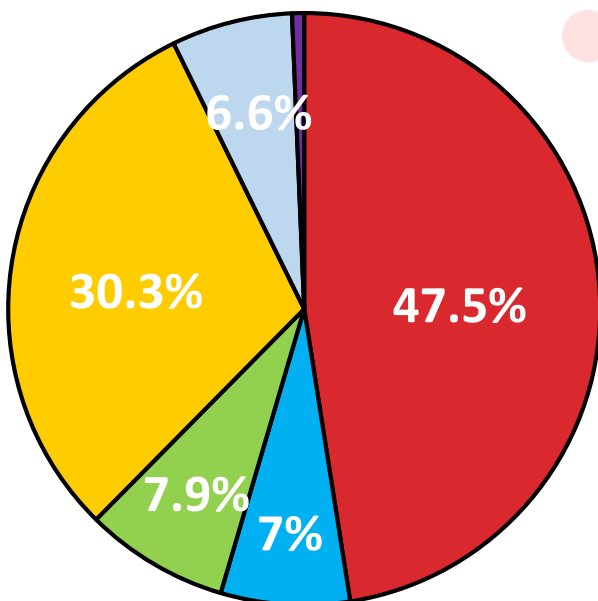
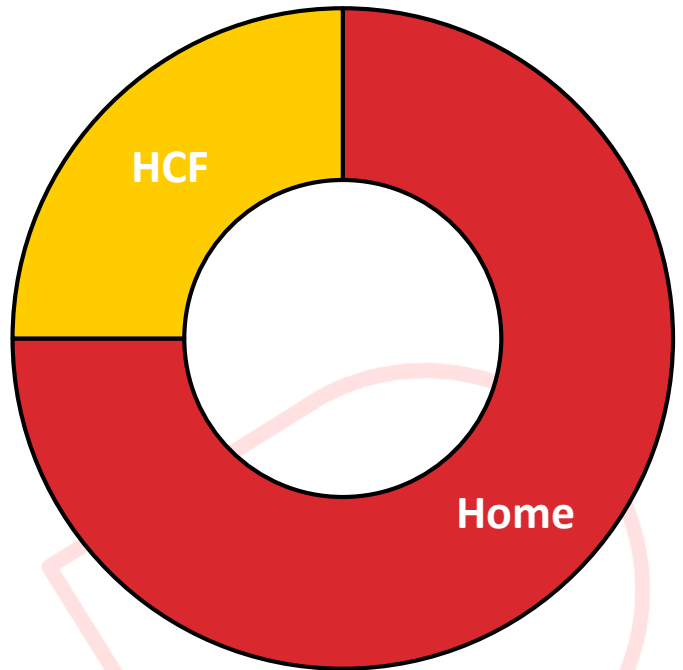
“Thanks for your help, thankful this is available for the people of Alabama.”

According to **1,317** responses to the **2022 APIC Patient Satisfaction Survey**, if the poison center was not available **41%** would have called or visited their primary care physician, **32%** would have gone to the emergency department, **19%** would have called 911, and **8%** would have called another healthcare provider (HCP), friend, or tried to find information on the internet.

Calls per County per 1,000 Residents



75% of the calls made to the APIC came from patients at home. The remaining **25%** of calls came from doctors, nurses, pharmacists, paramedics, and other health care providers.



Call Volume by Patient Age	
<6 years	16,590
6-12 years	2,458
13-19 years	2,743
20-64 years	10,588
≥65 years	2,308
Unknown	230

In 2022 the APIC hosted **14** PharmD candidate rotators and a PGY1 Pharmacy Resident. The rotation involves researching and presenting information about toxic substances, trips to the Birmingham Zoo to see venomous and nonvenomous snakes native to Alabama, and taking calls in the Poison Center. Fourteen PharmD students completed the Current Topics in Toxicology elective at the McWhorter School of Pharmacy and visited Birmingham Botanical Gardens to see nonpoisonous and poisonous plants.

Five months a year there is a medical toxicology elective offered to senior medical students, pharmacy students, and medical residents. The course focuses on care of the poisoned patient through treating patients at the bedside at UAB hospital, daily review of Alabama Poison Information Center cases, didactics focusing on critical care toxicity, simulations in managing the intoxicated patient, and regional field trips to identify poisonous plants, mushrooms, and snakes of Alabama.

Faculty is multidisciplinary with expertise in pharmacology, toxicology, hyperbaric medicine, wilderness medicine, and international medicine.

In the current academic year, **8** residents and **13** medical students completed the course.





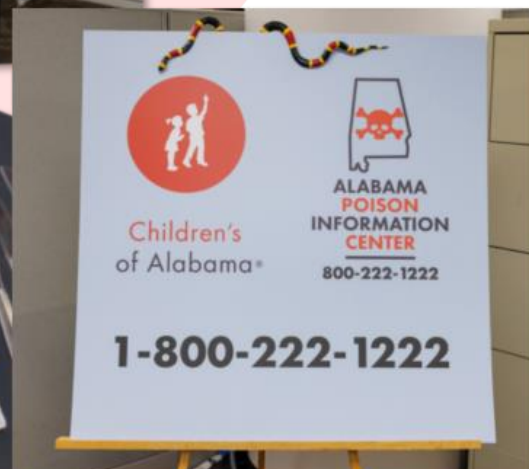
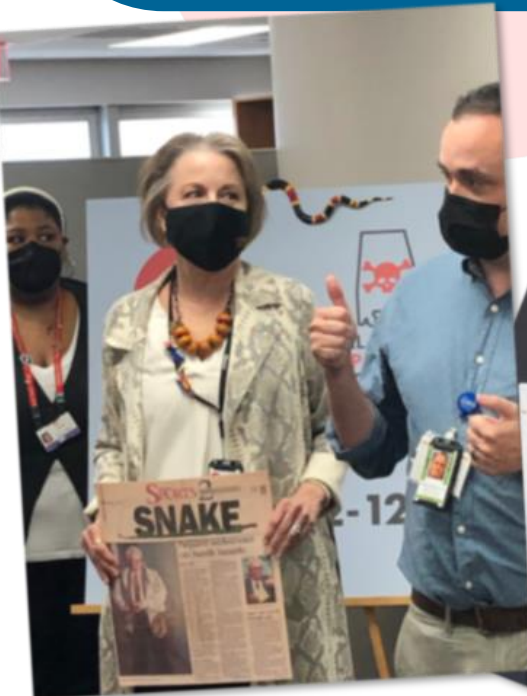
In 2022 the APIC participated in **80** hours of community health events, engaging with the public and distributing poison information to approximately **6,500** Alabamians.

Along with Healthy Child Care of Alabama (HCCA) the APIC provided **1,852** poison prevention programs reaching a total of **9,717** parents throughout all 67 counties.

HCCA nurses distributed **15,436** poison prevention items provided by the APIC.



Dr. Pitts and Dr. Callahan began an informal snakebite envenomation consulting service for Alabama emergency departments in 1988. By 1990 consults grew in number and geographic region (Georgia and Tennessee), and expanded from snakebites to include venomous spider bites. The Alabama Center for Envenomations (ACE) was established in 1991 and Drs. Pitts and Callahan shared the handling of the more involved cases, while Alabama Poison Information Center (APIC, formerly the Regional Poison Control Center) followed the less complex cases. In 1994, greater than 120 spider and snake bites were triaged and treatment recommendations given by the duo and the APIC. There were riveting cases from the Opp Rattlesnake Rodeo to the Salvation on Sand Mountain. Dr. Pitts invited guest speakers such as Dr. Findlay Russell, a renowned toxicologist, to present at Grand Rounds on snake envenomation, while Dr. Pitts brought his snakes. The ACE remained active until 1996. It was a very exciting time for all the APIC nurses and pharmacists to be involved in such a vibrant and educational program.



In 2022 APIC published **10** abstract poster presentations at five national toxicology conferences...

The Cats Without Nine Lives: The Value of the Social History in a Diagnostic Challenge

Mertens EO, Molina AL, Kirkwood B, Schmit EO, Soyster N, Joseph J, Rushton WF.

Too Young for Heavy Metal: Environmental Toxin Diagnosis and the Value of the Social History

Mertens EO, Molina AL, Kirkwood B, Schmit EO, Soyster N, Joseph J, Rushton WF.

72. A comparison of snakebite patients in those with and without diabetes

Sukshant Atti^a, Rita Farah^b, Michael Beuhler^c, Kerollos Shaker^d, Kim Aldy^e, Sharon Campleman^e, Paul Wax^f, Jeffrey Brent^g and Anne-Michelle Ruha^h; On behalf of the ToxIC North American Snakebite Study Group

275. Bigger isn't always better: diagnosing obstructions in water bead ingestions

LaDonna Gaines and Amy White
Alabama Poison Information Center, Children's of Alabama, Birmingham, AL, USA

Background: Water beads are popular toys that have been around for almost 20 years. While toxicity has historically been rare, there remains a risk for airway or bowel obstruction. The

286. Pain pump predicament

Jamie Hutchins and Nikki Ritchie
Alabama Poison Information Center, Birmingham, AL, USA

Background: The goal of this case report is to describe flaccid intrathecal bupivacaine manipulation that was venous lipid emulsion (ILE) therapy. Many case reports have explored the successful use of ILE therapy to reverse local anesthetic toxicity that can present with or without the presence of a pump. In this case, we address the outcome in the use of ILE therapy to reverse bupivacaine toxicity.

A 3-year-old male with a history of vertebral injury required an intrathecal pump for pain management. He holds a 70-day supply of medication: clonidine 70 mcg/mL, morphine 3.5 mg/mL, 2.75 mg/mL. The patient was having medication pump by a home health care company in a group home when an error occurred during the medication triggering an immediate loss of consciousness into his lower extremities. He presented to the emergency department within 45 min. Initial vital signs were notable for mild hypotension and tachycardia. Over the next several hours, the patient became increasingly lethargic. Initial labs on arrival demonstrated a serum lactate of 2.2 mEq/L that was soon corrected.

The patient was treated with potential clonidine and morphine as antidote for systemic toxicity. The patient was transferred to a tertiary care center approximately 9 h following ILE administration. In his abdomen and legs but not in his arms, patients with ILE therapy, patients with ILE therapy were cleared 3 days post admission with

The case report reveals a previous case report of a patient with a pain pump malfunction during refill. The patient presented with sensory neuropathy followed by lower extremity flaccidity. Her symptoms were refractory to standard treatment but was not immediately effectuated with a phenobarbital bolus. In this specific case, neurotoxicity with hypotension and ILE therapy was had effects lasting up to 24 h. Both the patient and the pump eventually resolved of neurotoxicity. The patient was treated with bupivacaine toxicity may present with symptoms that remain ambiguous and further.

Adjunct Use of Fomepizole for Acetaminophen Toxicity

Griesmer K; Cortopassi J; Rushton W. Presented at Emerald Coast ACEP. June 2022. Destin, Florida.

30. Characteristics associated with utilization of a novel multidisciplinary outpatient snakebite clinic

William Rushton^a, Erin Ryan^a, Dag Shapshak^b and Sukshant Atti^b

^aAlabama Poison Information Center, Birmingham, AL, USA; ^bDepartment of Emergency Medicine, University of Alabama at Birmingham, Birmingham, AL, USA

224. Utility of an ED-ICU in the management of the poisoned patient

William Rushton^a, Erin Ryan^a, Jessica Rivera Pescatore^b, Sukshant Atti^c, Adam Kessler^c and Caitlin Fellers^b

^aAlabama Poison Information Center, Birmingham, AL, USA; ^bDepartment of Pharmacy, University of Alabama at Birmingham, Birmingham, AL, USA; ^cDepartment of Emergency Medicine, University of Alabama at Birmingham, Birmingham, AL, USA

283. Twist of phate: severe toxicity after an intentional acephate ingestion

Brian Whitworth^a, Sukshant Atti^b, Brooke Blackwell^c and Erin Ryan^a

^aAlabama Poison Information Center, Birmingham, AL, USA; ^bUniversity of Alabama at Birmingham, Birmingham, AL, USA; ^cAlabama Poison Information Center, Children's of Alabama, Birmingham, AL, USA

074. Snake Bites in Diabetic Patients: A Descriptive Analysis

Sukshant K Atti^{1,2}, Erin Ryan³, William Rushton^{1,2}, Michael Beuhler³, Kerollos Shaker⁴, Kim Aldy^{5,5}, Sharon Campleman⁵, Paul Wax^{4,5}, Jeffrey Brent⁶, Michelle Ruha⁷. On Behalf of the Toxicology Investigators Consortium (ToxIC) North American Snakebite Study Group

¹University of Alabama at Birmingham, Birmingham, Alabama, USA. ²Alabama Poison Information Center, Birmingham, Alabama, USA. ³North Carolina Poison Control, Atrium Health, Charlotte, North Carolina, USA. ⁴University of Texas Southwestern Medical Center, Dallas, Texas, USA. ⁵American College of Medical Toxicology, Phoenix, Arizona, USA. ⁶University of Colorado, Aurora, Colorado, USA. ⁷Banner-University Medical Center Phoenix, Phoenix, Arizona, USA

Background: There is limited literature examining the impact of comorbidities such as diabetes on the clinical course of snake envenomations. This report summarizes characteristics of snake envenomations in patients with diabetes.

Methods: All cases reported to the Toxicology Investigators Consortium North American Snakebite Registry between 2013 and 2020 in patients with a history of diabetes were reviewed, and data on demographics, clinical effects, treatments, and outcomes were extracted.

Results: Thirty-four cases from 10 states were identified. Median age was 46.5 years (range 3-75 years) and 67.6% (n = 23) were male. The majority of patients (n = 26, 76.5%) had at least one additional comorbidity. Most bites involved rattlesnakes (n = 18, 52.9%) or copperheads (n = 10, 29.4%), and there were equal numbers of upper and lower extremity bites. The most common effects were swelling (n = 32, 94.1%) and ecchymosis (N22, 64.7%). Hemotoxicity (platelets <120, fibrinogen < 170, or PT >15) occurred in 20.6% (n = 7) of patients initially and 20.6% (n = 7) at follow up. Three patients (8.82%) developed necrosis; two required procedures (debridement, incision and drainage, and/or skin graft). Hypotension was noted in five patients (14.7%) but resolved with IV fluid resuscitation in all but one. Two patients (5.88%) required mechanical ventilation. Antivenom was administered in 88.2% (n = 30) of cases with a median total dose of 10 vials (range 4-53 vials; IQR 6-13.5 vials). Hospital length of stay was < 48 hours in 82.4% (n = 28) of patients and < 24 hours in 41.2% (n = 14); 41.2% (n = 14) were admitted to an intensive care unit. At final follow up (up to three weeks from initial bite), seven patients (20.6%) had residual functional deficits and one (2.94%) suffered permanent tissue loss.

Conclusion: The majority of snake envenomations in diabetes patients described in this report required treatment with antivenom and most had short hospital stays.

ToxIC
Toxicology Investigators Consortium

This research was performed in collaboration with the ACMT Toxicology Investigators Consortium.

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Journal of Drug and Alcohol Research
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Research Article

Clinical Characteristics of Kratom Exposures Reported to the Georgia and Alabama Poison Control Centers from 2016–2020: A Retrospective Review

P. Palungwachira^{1,2*}, M. Yeh¹, B. Whitworth¹, W. Rushton¹ and Z. Kazzi¹

frontiers | Frontiers in Neurology

CASE REPORT
published: 20 May 2022
doi: 10.3389/fnrv.2022.893757



Management of Cerebral Herniation Secondary to Lead Encephalopathy: A Case Report

Somnath Das¹, Felicia Hataway², Hunter S. Boudreau³, Yasaman Alam⁴, Jordan A. George⁵, William Rushton¹, Sukshant Atti¹, Manmeet Kaur⁷ and Marshall T. Holland^{1*}

CORRESPONDENCE

Snake Envenomation

TO THE EDITOR: In their excellent review of the management of snake envenomation, Seifert et al. (Jan. 6 issue)¹ pay little attention to the importance of hospital follow-up. Despite aggressive treatment with early antivenom, patients may have lymphedema, decreased range of motion, progressing bullae, and coagulopathy that persist beyond their inpatient treatment.^{2,3}

The North American Snakebite Registry has reported that 10.7% of snakebite victims with follow-up information had residual limb deficits. Even in this study, follow-up information was not available for approximately 40% of the patients, which emphasizes the lack of data regarding the true incidence of persistent venom sequelae.² Similarly, expert consensus for the treatment of crotaline snakebite recognizes the paucity of data to inform decisions regarding which patients should receive follow-up.³

In 2021, our academic center piloted a statewide follow-up clinic for patients with snakebite. Of the 17 patients who have been seen, 11 had lymphedema with reduced limb function. In our clinic, patients are screened for rebound coagu-

TO THE EDITOR: We want to add thrombotic microangiopathy to the spectrum of snake envenomation effects that are described in the review article by Seifert et al. This condition is an under-recognized complication of snakebite that is usually seen in association with bites from hump-nosed vipers (hypnale species), Russell's viper (*Daboia russelii*), and Australian brown snakes (pseudochis species).¹ The pathogenesis of thrombotic microangiopathy is poorly understood. Antivenom remains the standard of care, even though its beneficial effect with respect to thrombotic microangiopathy is unclear.² The most appropriate role for plasmapheresis has also not been established, and the decision whether to perform this procedure needs to be individualized.³ Thrombotic microangiopathy after snakebite is almost always associated with acute kidney injury, a condition that improves with time in most cases.

To illustrate, we describe a patient who was admitted to our institute in July 2021. After she was bitten by a Russell's viper, an elderly woman had rapid development of limb swelling, gum

...and **3** articles were published in medical journals using APIC data.

APIC in the Media

Interviews:

[Poison control expert warns about dangers of carbon monoxide during the winter](#)

[Alabama lawmakers seek to regulate Delta 8 THC](#)

[Talk of Alabama | National Poison Prevention Week](#)

[It's national poison prevention week: Keep your children \(and teens\) safe](#)

[Alabama Poison Information Center shares medication safety tips for families](#)

[Spring Cleaning: Household chemicals can become poison if not handled correctly](#)

[UAB's new snakebite program, one of the nation's first, offers cutting-edge care](#)

[Snakebite Season in Alabama: UAB Program Offers Multidisciplinary, Cutting-Edge Care When Snakes Bite](#)

[Snake bites in Alabama up to 47 this year; UAB opens unique clinic for patients](#)

[Melatonin poisonings in children spike during pandemic; 52,000 calls to poison control](#)

Online Newsrooms:

[How the Alabama Poison Information Center can help](#)

[Proper Medication Storage](#)

[Alabama Poison Information Center: Look-Alikes](#)

[Roundtable on Vaping](#)

What's New?

COA/UAB Comprehensive Snakebite Program coordinated through the Alabama Poison Information Center:

Patients who arrive at UAB Medicine or Children's of Alabama are treated by Emergency Medicine physicians who have special training in snakebite treatment. Early phases of care include standardizing wound measurements, providing pain relief, assessment for systemic symptoms, and advanced testing for blood thinning. Patients are then admitted to highly trained patient care areas to receive serial measurements and overnight monitoring for coagulopathy.

A medical toxicologist trained in snake envenomation works with the patients' healthcare team to provide a detailed antivenom plan. This stage of treatment focuses on improving mobility, range of motion, and early joint usage. Inpatient wound care specialists are also available if needed.

Patients who are not treated at UAB or COA have their care augmented by the Alabama Poison Information Center (APIC) at Children's of Alabama through phone consultations. Any physician in the state can consult with experts at APIC for recommendations and care input. APIC covers all health care facilities in the state of Alabama and is available 24/7 for patient and/or physician consultation.

Treatment may continue after hospital discharge. Outpatient follow-up is available at the UAB Comprehensive Wound Care Clinic, where specialists work collaboratively and closely with APIC for long-term lab monitoring of potential venom injury while providing strategies for treatment of limb swelling and localized wound care. Physical therapy is available for those patients who require improved limb function recovery.

In addition to providing world-class clinical services, the Comprehensive Snakebite Program is committed to advancing research and care in the field.

To date, the program has successfully treated more than 30 inpatients and 40 outpatients. The program has resulted in significant cost saving, reduced length of stay, close follow-up, and positive patient encounters.

Top 10 Substances seen in Pediatric Exposures in Alabama*

1. Cleaning Products
2. Cosmetics
3. Analgesics
4. Dietary Supplements
5. Foreign Bodies
6. Antihistamines
7. Vitamins
8. Pesticides
9. Topicals
10. GI Preparations

*Pediatric patients less than 6 years of age

Top 10 Substances seen in Pediatric Exposures in the US*

1. Cleaning Products
2. Analgesics
3. Cosmetics
4. Dietary Supplements
5. Foreign Bodies
6. Antihistamines
7. Vitamins
8. Topicals
9. Pesticides
10. Plants

*Pediatric patients less than 6 years of age

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