



Maryland Poison Center
UNIVERSITY OF MARYLAND SCHOOL OF PHARMACY

2018 ANNUAL REPORT



1.800.222.1222
www.mdpoison.com

FROM THE DIRECTOR

Welcome to the 2018 Maryland Poison Center (MPC) Annual Report! The data in this report summarize the activities and experiences of the Maryland Poison Center during our 46th year of service. This past year has been one of significant changes – primarily the retirement of four staff members after decades of service to the MPC. Collectively, they committed a total of 111 years during their tenure at the MPC. For perspective, a poison specialist (the pharmacists and nurses who respond to phone calls for help 24 hours a day) manages between 2,000 and 6,000 calls per year. The experience of our four recent retirees cannot be replaced. It has to be earned.

We're exceptionally fortunate, though, to have many seasoned poison specialists to help with the transition and to support our newer staff members. How experienced are these professionals? Add up the total years of service in the MPC for the remaining staff and that number is more than 166 years. Our newer staff benefit from working and training with our outstanding specialists. As a result, our new staff who have taken the national certification exam for poison specialists have all done extremely well. This rigorous exam is only administered once per year. Poison specialists need to have managed at least 2,000 human

exposure cases before they are qualified to take the exam. And specialists are required to re-test every seven years. All MPC poison specialists that are eligible to take this exam are certified as Specialists in Poison Information.

In addition to changes in staffing at the poison specialist position, we've also seen changes at other key positions. Angel Bivens, BS Pharm, MBA, CSPI, is now the MPC's assistant director of operations and public education. Ms. Bivens has been with the MPC since 1988, where she most recently led our public education efforts since 2001. She's now assuming additional administrative responsibilities, in addition to ensuring that all four million people in our service area know who we are and what we do.

The last major change has been with our medical director position. Hong Kim, MD, who supported the MPC as medical director for several years, returned to fulltime emergency medicine practice in June 2018. Elizabeth (Liz) Hines, MD, served as our interim medical director until February 2019, when we hired Josh King, MD, as our medical director.



Dr. King completed his BS in biochemistry at the University of Maryland, College Park and earned his MD degree at Penn State University. He completed an internal medicine residency at the University of Virginia (UVA), did a nephrology fellowship at Johns Hopkins, and then completed medical toxicology fellowship training at UVA.

Dr. King is a diplomate of the American Board of Emergency Medicine, Medical Toxicology, a diplomat of the American Board of Internal Medicine, Nephrology, and a diplomate of the American Board of Internal Medicine. He's the only board certified medical toxicologist and board certified nephrologist in the US - and one of only two such individuals in the world.

Dr. King will be splitting his time between teaching and practice at the University of Maryland School of Medicine and in the Maryland Poison Center. Please join me in welcoming him to the School of Pharmacy and the MPC!

Despite these staffing changes, the MPC's mission doesn't change. We are committed to doing what we can to decrease the costs and complexity of care to victims of poisoning while maintaining and or improving outcomes.

Sincerely,

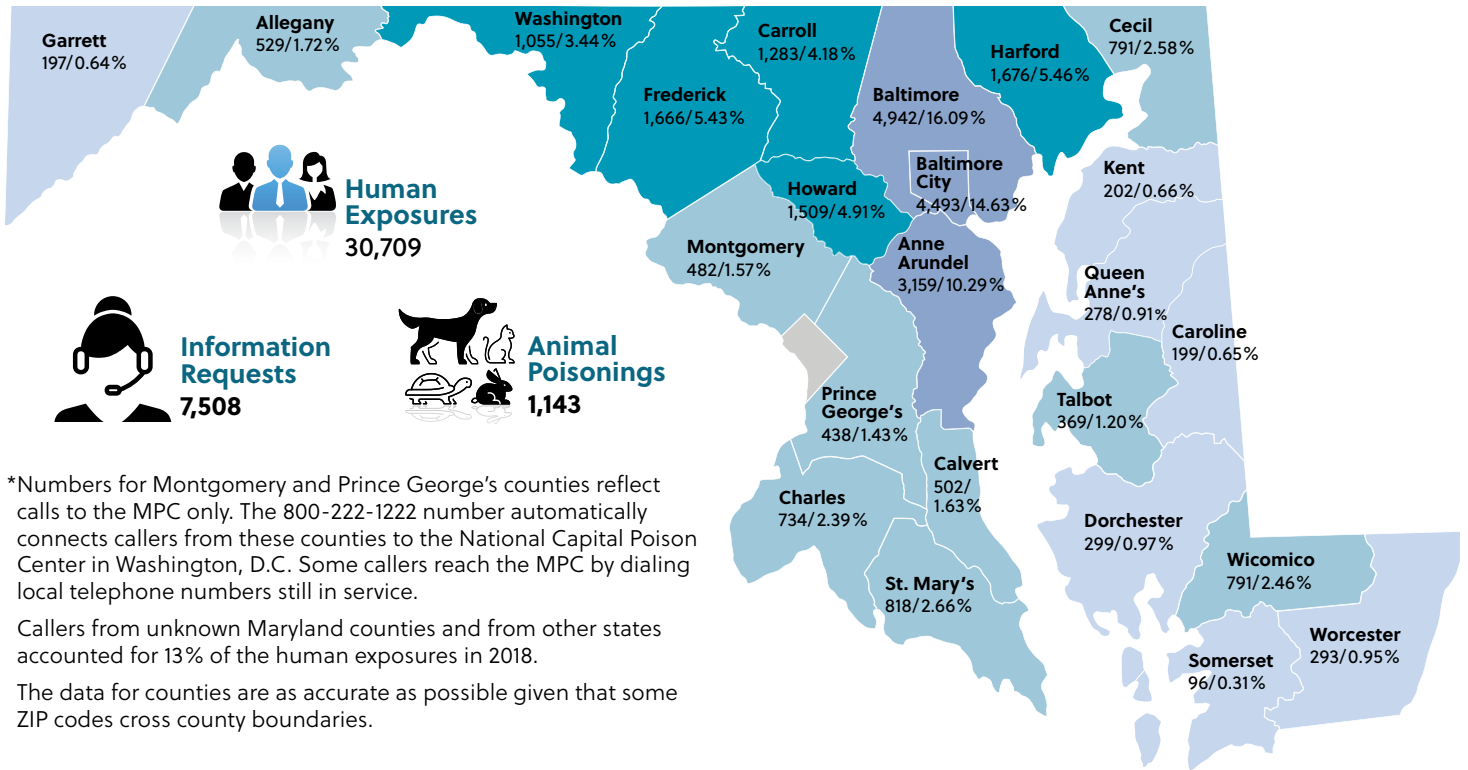
Bruce D. Anderson,
PharmD, DABAT, FAACT
Executive Director
Maryland Poison Center
Professor of Pharmacy Practice
and Science
University of Maryland School
of Pharmacy



**39,360 - total calls answered
by the MPC in 2018**

HUMAN EXPOSURES

In 2018, the Maryland Poison Center received a total of 39,360 calls.

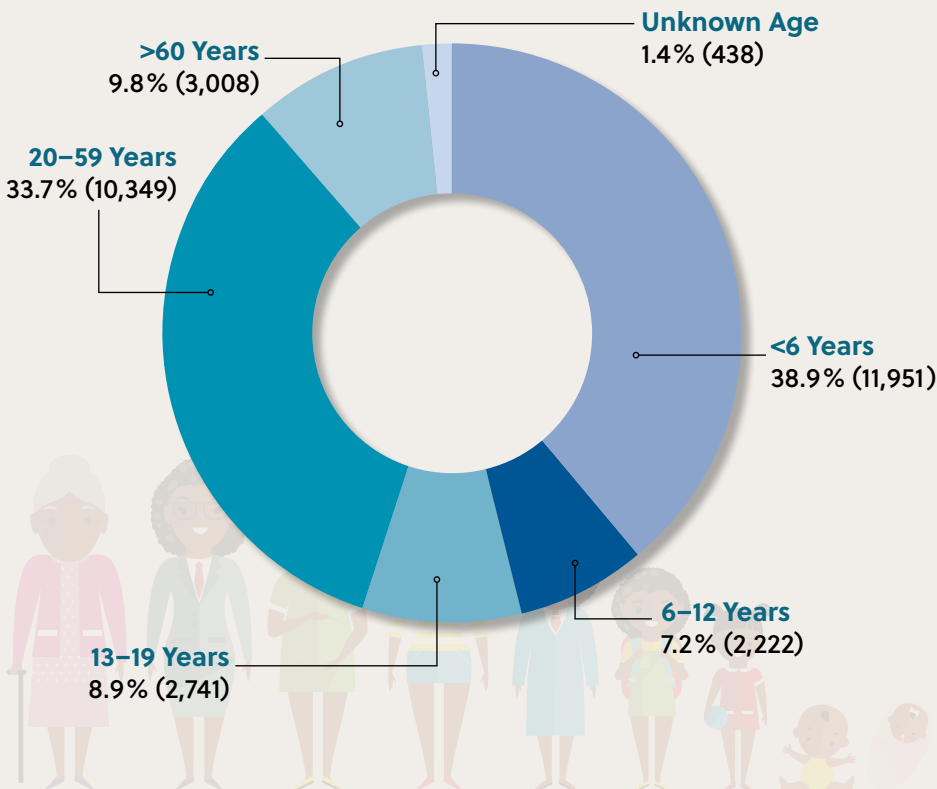


*Numbers for Montgomery and Prince George's counties reflect calls to the MPC only. The 800-222-1222 number automatically connects callers from these counties to the National Capital Poison Center in Washington, D.C. Some callers reach the MPC by dialing local telephone numbers still in service.

Callers from unknown Maryland counties and from other states accounted for 13% of the human exposures in 2018.

The data for counties are as accurate as possible given that some ZIP codes cross county boundaries.

EXPOSURES BY AGE



By the end of 2018, the MPC's Facebook page had followers from 21 of 22 counties in the center's service area.

SITE OF CALLER



Residence
60.4% (18,546)



Health Care Facility
25.2% (7,754)



EMS Provider
5.5% (1,704)



Other/Unknown
5.3% (1,624)



School/School Nurse
2.9% (905)



Workplace
0.6% (176)

Residence can be the patient's residence or another residence.

Health care facilities include hospitals, physician's offices, urgent care centers, clinics, and others.

Emergency medical services providers include EMS, paramedic, first responder, and emergency medical dispatcher (911 dispatcher).



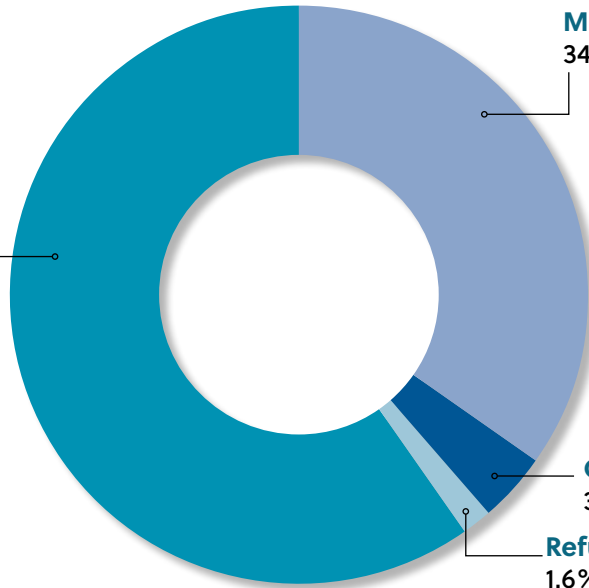
MPC SAFELY MANAGES PATIENTS AT HOME

Managed on Site/
Non-HCF
59.7% (18,320)

Managed in HCF
34.8% (10,696)

Other/Unknown
3.9% (1,206)

Refused Referral
1.6% (487)



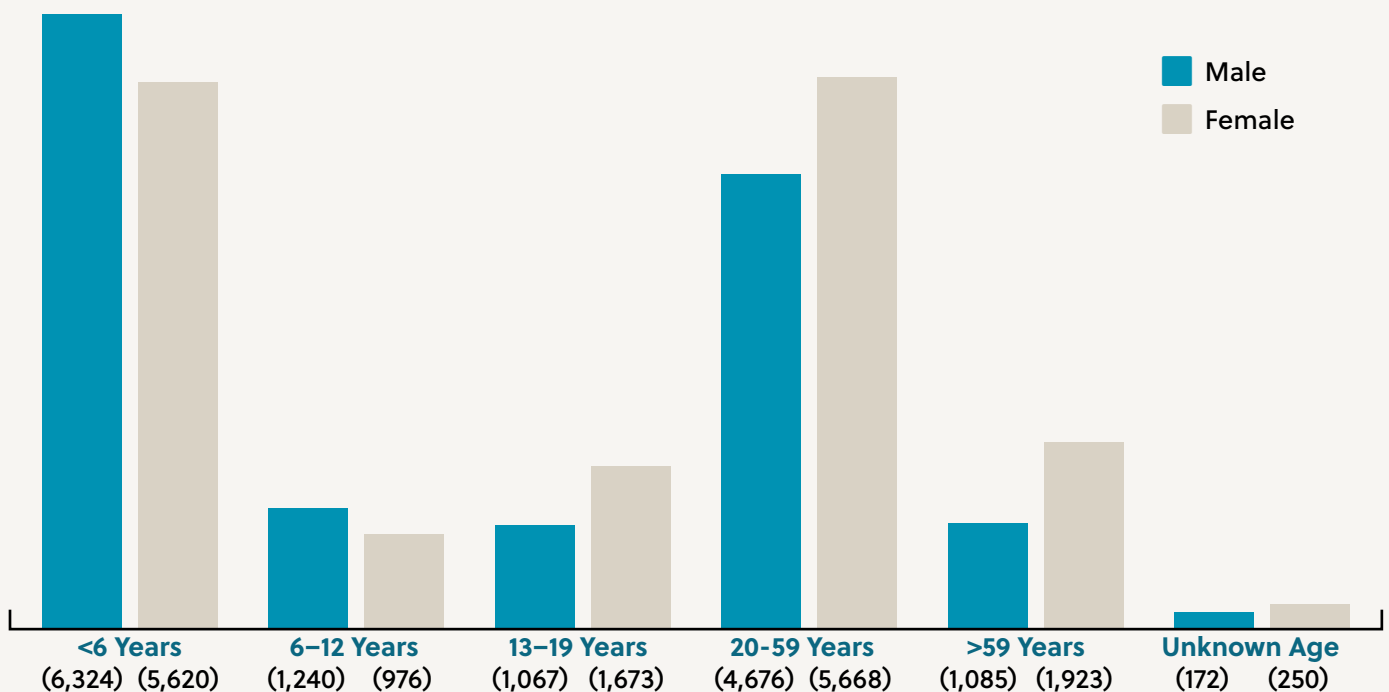
When EMS providers or 911 consult with the MPC about patients, 9 percent of those patients are not taken to a health care facility based on poison center advice because they can be managed safely at home.

Managing cases safely at home:

- Saves millions of dollars in unnecessary health care costs compared with managing patients in a health care facility (HCF)
- Allows more efficient and effective use of limited health care resources

GENDER

47.4 percent of exposures occurred in males, and 52.5 percent in females (0.1 percent unknown).



HEALTH PROFESSIONAL EDUCATION

Professional education is designed to help clinicians better manage poisoning and overdose cases that end up in a health care facility by providing on-site training for physicians, pharmacists, and EMS providers. Over the years, we have seen decreases in calls coming from homes and increases in calls coming from health care facilities and first responders. In 2018, nearly one-third of calls to the poison center came from physicians, physician assistants, nurse practitioners, nurses, and emergency medical personnel.

The MPC's Twitter account for health care professionals (@MPCToxTidbits) posted clinical and medical toxicology content relevant for health care providers.

PROGRAM SPOTLIGHT:

PharmCon Webinars

The MPC has enjoyed an 11-year partnership with PharmCon, Inc., presenting live poisoning related webinars. PharmCon is the host and promoter of the website www.FreeCE.com, the nationally recognized leading provider of internet continuing education (CE) for physicians, pharmacists, physician assistants, and nurse practitioners. It is an approved CE provider for the Accreditation Council for Pharmacy Education and the Accreditation Council for

Continuing Medical Education, as well as the boards of nursing for Florida and California.

In 2018, the MPC provided 18 webinars that reached approximately 24,700 health care professionals. Throughout the years, this partnership has proved to be a valuable means of reaching out to health care providers about the services of poison centers as well as increasing clinical knowledge of the field of toxicology.



- 36 programs and webinars reached more than 25,000 health care professionals
- 108 health care professionals came to the MPC in 2018 to learn about the assessment and treatment of poisoned patients

ROUTE OF EXPOSURE*



Ingestion
81.7% (25,074)



Dermal
6.6% (2,019)



Inhalation
6.3% (1,933)



Ocular
4.5% (1,367)



Bite/Sting
0.9% (271)

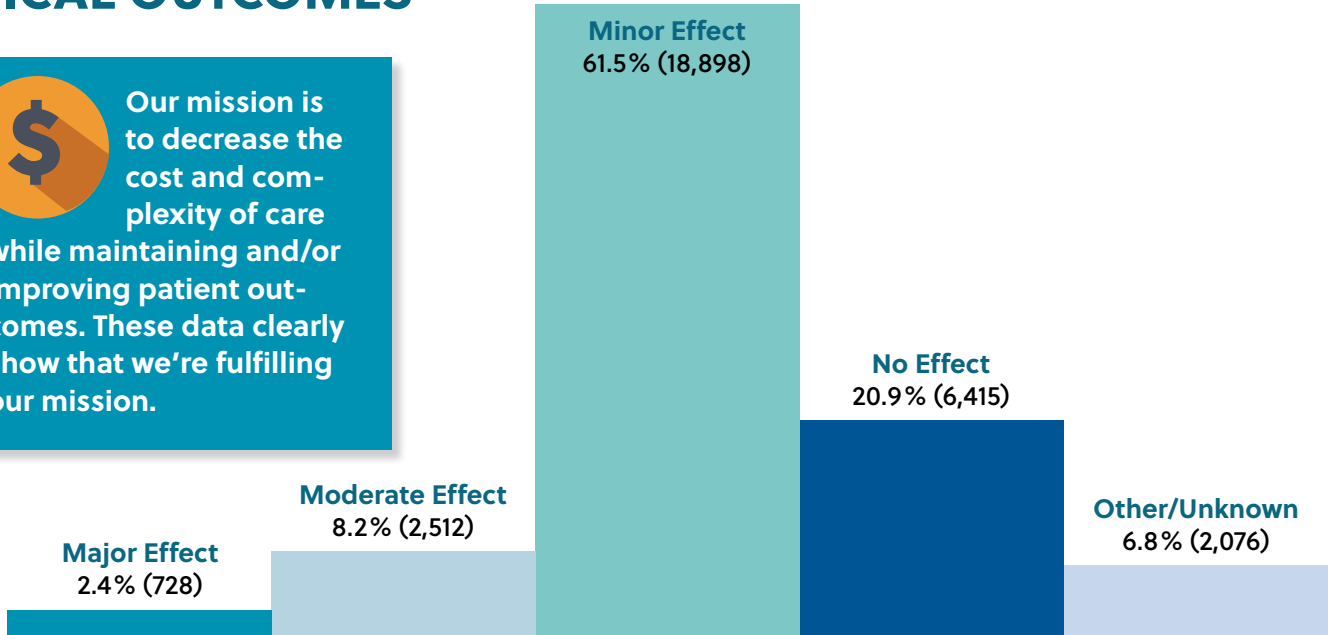


Other
5.3% (1,624)

*Some cases involved multiple routes of exposure. Percentages are based on the total number of human exposures.

MEDICAL OUTCOMES

 Our mission is to decrease the cost and complexity of care while maintaining and/or improving patient outcomes. These data clearly show that we're fulfilling our mission.



The true measure of the effectiveness of the MPC program is in patient outcomes. Although there were 80 cases reported to the MPC that resulted in death in 2018, the impact of the MPC is obvious: most cases had good outcomes.

Calling the MPC as soon as a poisoning or overdose is suspected is the best way to reduce the likelihood of developing severe toxicity.



Top 5 Causes of Poisoning

1 Pain Relievers



2 Sedatives, Hypnotics, and Antipsychotics

3 Cosmetics or Personal Care Products




4 Household Cleaning Products

5 Antidepressants



SUBSTANCES INVOLVED IN POISONINGS

The tables below list the most common substances involved in poisonings and overdoses reported to the MPC in 2018. A patient may be exposed to more than one substance in a poisoning or overdose case.



80.2 percent of the poisoning and overdose calls to the MPC involved a drug, while 46.9 percent of calls involved a non-drug substance.



TOP 10 DRUG SUBSTANCES	NO.	%
Analgesics.....	4,547	14.8%
Sedatives/Hypnotics/ Antipsychotics.....	2,514	8.2%
Antidepressants.....	2,318	7.5%
Stimulants/Street Drugs.....	2,029	6.6%
Cardiovascular Drugs.....	1,918	6.2%
Antihistamines.....	1,625	5.3%
Anticonvulsants.....	1,240	4.0%
Hormones (including diabetes and thyroid medicines).....	849	2.8%
Vitamins.....	827	2.7%
Cold and Cough Medicines ..	825	2.7%
Other.....	5,937	19.3%
TOTAL.....	24,629	80.2%

TOTAL HUMAN EXPOSURES 30,709

TOP 10 NON-DRUG SUBSTANCES	NO.	%
Cosmetics/ Personal Care Products.....	2,422	7.9%
Cleaning Substances (Household).....	2,383	7.8%
Foreign Bodies/ Toys/Miscellaneous.....	1,384	4.5%
Alcohols.....	1,291	4.2%
Pesticides.....	1,079	3.5%
Chemicals.....	575	1.9%
Arts/Crafts/ Office Supplies.....	537	1.7%
Plants.....	517	1.7%
Fumes/Gases/Vapors.....	382	1.2%
Hydrocarbons.....	358	1.2%
Other.....	3,461	11.3%
TOTAL.....	14,389	46.9%

TOTAL HUMAN EXPOSURES 30,709

Percentages in the tables are based on the total number of human exposures.

TOXTIDBITS AND POISON PREVENTION PRESS

ToxTidbits and Poison Prevention Press keep health care providers and community members up-to-date on poison-related topics.

ToxTidbits is a monthly newsletter for health professionals containing important toxicology information, updates, and news. Some of the topics addressed in 2018 include:

- Synthetic Cannabinoids
- Toxicity of Newer Atypical Antipsychotics in Young Children
- If It Smells Rotten...Beware!
- Two-bag Acetylcysteine: Simpler and Safer
- Intoxication Deaths in Maryland
- Cannabinoid Hyperemesis Syndrome

ToxTidbits is sent to email subscribers and faxed to every emergency department in our service area.

ToxTidbits: Antidote Facts are short reviews of antidotes written by MPC staff and students. All antidote fact sheets were reviewed in 2018 and updated as needed. We also provide a list of recommended antidotes and stock levels for hospital pharmacies.

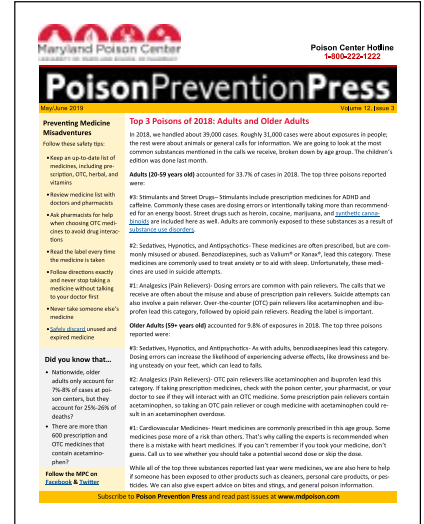


The MPC publishes **Poison Prevention Press**, an e-newsletter for the general public, every other month. The newsletter highlights various poison safety topics presented in 2018 include:

- Aroma Therapy and Essential Oils
- A Day in the Life of the Poison Center
- E-Cigarettes and Nicotine
- Making the Right Call
- OTC Medicine Safety for Tweens and Teens
- Holiday Food Safety

Poison Prevention Press is sent to e-mail subscribers who are encouraged to post and share the newsletter with others.

To receive **ToxTidbits** or **Poison Prevention Press** by email, visit www.mdpoison.com and click on "Receive Newsletter." Current and previous issues of both newsletters can be read and downloaded from the MPC website.



29% of ToxTidbits Twitter followers are international, 17% are in Maryland and 5% in Pennsylvania.

Visitors to the ToxTidbits page of the MPC website were from the US and more than 150 other countries

SOCIAL MEDIA AND WEBSITE

In an attempt to reach more Marylanders with our educational and awareness messages, the MPC continued to expand its social media presence in 2018. We posted regularly on Facebook (@MarylandPoisonCenter) and Twitter (@MDPoisonCtr). Posts often directed followers to information on our website, blog, and YouTube channel.



Four new original videos were posted on YouTube with more than 4,000 views for a total watch time of more than 90 hours

More than 29,500 people visited the MPC website, yielding more than 65,000 page views

TRADITIONAL MEDIA

In 2018, the MPC and/or staff appeared in the media at least 41 times. The coverage included web (35) and TV (6). In April, the MPC issued a press release communicating a warning about synthetic cannabinoids being laced with brodifacoum, a substance commonly found in rat poison. Much of the media generated by the MPC in 2018 was aimed at

notifying health care providers of the symptoms with which patients would present as well as warning the public of the possible tainted products being sold. The MPC was also interviewed at the beginning of the year when teens were participating in the Tide Pod Challenge, which was popular on the internet.

SATISFIED CALLERS



Public

Anna wrote on Facebook in March 2018:

"Thank you so much to both Randy and Denise in helping my family when my son managed to get glow-in-the-dark goo in his eye! I really appreciate this service and the people who make it happen. The follow-up phone call to ensure that he was okay was so reassuring. You are all appreciated!"

Heather wrote on Facebook in May 2018:

"Thank you to poison control as well for being helpful, caring, and amazing, too!"

Dixie wrote on Facebook in December 2018:

"Thank you for giving my son great advice for his dog. I was giving him the same advice as a pharmacist, but he didn't believe me until you told him the same thing."

Molly replied to the MPC Caller Satisfaction Survey in June 2018:

"Josh answered my call, knew immediately what the problem was, and gave me the reason for the problem, assured me it would be ok and gave me clear instructions on how to help my daughter...Had I not called, we would probably be just heading out to the express care. I am very grateful for the help. Thank you!"

Health Care Professionals

Anonymous response to MPC Health Care Professional Survey in January 2018:

"When I was in a PICU setting, we enjoyed the annual visits by your pharmacists. The information was always timely and helpful."

PUBLIC EDUCATION

Our focus

1. Increase awareness of the poisons found in every home, business, and school.
2. Help prevent poisonings from occurring by encouraging safe storage and proper use of household products and medicines.
3. Highlight the expertise of the staff of the MPC and that calling will result in the right answer right away 24/7.



66 programs in
15 counties
attended by
2,093 people

More than 162,000 pieces
of educational materials
distributed

PUBLIC EDUCATION SPOTLIGHT:

eAntidote, Blog of the Maryland Poison Center

In the fall of 2017, the MPC launched our blog, eAntidote. We created the blog to provide a behind the scenes look at life at a poison center, practical tips to keep your family safe, and a look at current poison news and trends. We didn't know what to expect, but were happy with the results of our first full year of blogging.

In 2018, we had 24 blog posts reaching nearly 2,200 people. The top posts by page view were:

- *The Laundry Pod Challenge*
- *Why eAntidote?*
- *Your Halloween Candy Wasn't Poisoned*
- *Are Essential Oils Dangerous?*
- *Poison Myths Busted: Swallowed Something: Throw It Up*

We also highlighted our poison experts throughout the year so readers could get to know the people behind the voice on the phone.

Most of our visitors to the blog in 2018 arrived by way of Facebook or by accessing the blog directly or from our monthly direct e-mail.


We feel we have just scratched the surface of the potential for eAntidote to educate the community about poison safety and poison centers. Our plans for the future include using our poison specialists as guest bloggers.



CIRCUMSTANCE

The people who contact the MPC have several different reasons for calling.

Unintentional 70.8% (21,730)	Unintentional exposures: <ul style="list-style-type: none"> • general misuse of products • occupational (workplace) • environmental • bites/stings • therapeutic errors • food poisoning
Intentional 24.9% (7,638)	Intentional exposures: <ul style="list-style-type: none"> • misuse • abuse • suicide attempts
Adverse Reaction 2.9% (887)	Adverse reactions to: <ul style="list-style-type: none"> • drugs • food • other substances
Other/Unknown 1.5% (454)	Other/unknown reasons: <ul style="list-style-type: none"> • malicious • contaminant/tampering



Therapeutic errors (double-doses, wrong medicines taken, etc) accounted for 15 percent of total exposures.

The reason for poison exposures differs by age. In young children (under 6 years), 99 percent of exposures are unintentional, while in teens (13-19 years), only 33 percent of exposures are unintentional. Exposures in adults (20-59 years) are split more evenly with 44 percent being

unintentional and 50 percent being intentional. In tweens (6-12 years) and older adults (60 years and older), most exposures are unintentional (86 percent and 73 percent respectively).



71% of exposure calls were unintentional

99% of exposures in children under 6 years old were unintentional while only 33% of exposures in 13-19 year olds were unintentional

87% of calls from the public were managed at home

70% of the calls involving older adults were about medicines

Approximately 700 calls were from grandparents about their grandchildren

RESEARCH PRESENTATIONS AND PUBLICATIONS

Leonard JB, McFadden C. Did I Do That: Analysis of Iatrogenic and In-hospital Medication Errors Submitted to United States Poison Centers (abstract). American Society of Health-System Pharmacists Midyear Clinical Meeting. Anaheim, CA. Dec. 2-6, 2018. International presentation, submitted and reviewed, original work. <https://doi.org/10.13140/RG.2.2.12820.14729>

Portman L, **Leonard JB.** Is Knowing Really Half the Battle: Comparing the Incidence of Hyperthyroid Symptoms in Confirmed Versus Suspected Pediatric Exposures to evothyroxine (abstract). American Society of Health-System Pharmacists Midyear Clinical Meeting. Anaheim, CA. Dec. 2-6, 2018. International presentation, original work. DOI: <https://doi.org/10.13140/RG.2.2.11981.28646>

Leonard JB, Custer JB, Hines EQ. Acute Hemolysis Following Acetaminophen Overdose in a Patient with Undiagnosed G6PD Deficiency (abstract). North American Congress of Clinical Toxicology. Chicago, IL. Oct. 25-29, 2018. International presentation, submitted and reviewed, original work. DOI: <https://doi.org/10.13140/RG.2.2.33683.94244>

Leonard JB, Ripple M, Hines EQ. Prime Eligible and Only \$17.00 on Amazon®: Fatal Sodium Azide Poisoning (abstract). North American Congress of Clinical Toxicology. Chicago, IL. Oct. 25-29, 2018. International presentation, submitted and reviewed, original work.

Leonard JB, Klein-Schwartz W. I Get High with a Little Help from My... Venlafaxine? (abstract). North American Congress of Clinical Toxicology. Chicago, IL. Oct. 25-29, 2018. International presentation, submitted and reviewed, original work. DOI: <https://doi.org/10.13140/RG.2.2.32006.22083>

Leonard JB, Klein-Schwartz W. The Others: Characterizing other Therapeutic Errors Reported to a Poison Center (abstract). North American Congress of Clinical Toxicology. Chicago, IL. Oct. 25-29, 2018. International presentation, submitted and reviewed, original work. DOI: <https://doi.org/10.13140/RG.2.2.16906.72645>

Leonard JB, Klein-Schwartz W. Comparison of Second Substances Used in Patients Abusing or Misusing LSD and Psilocybin Containing Mushrooms (abstract). North American Congress of Clinical Toxicology. Chicago, IL. Oct. 25-29, 2018. International presentation, submitted and reviewed, original work. DOI: <https://doi.org/10.13140/RG.2.2.13551.28326>

Mahonski SM, **Leonard JB, Gatz D, Seung, H, Zhang M, Kim HK.** Bystander Naloxone Administration for Undifferentiated Opioid Overdose in the Era of Non-pharmaceutical Fentanyl: A Retrospective Study of a Regional Poison Center Data (Platform). North American Congress of Clinical Toxicology. Chicago, IL. Oct. 25-29, 2018. International presentation, submitted and reviewed, original work. DOI: <https://doi.org/10.1080/15563650.2018.1506610>

Stassinis G, **Klein-Schwartz W.** Asenapine, Iloperidone, and Lurasidone Exposures in Young Children Reported to U.S. Poison Centers. *Clinical Toxicology*, 2018; 56(5):355-359. (doi: 10.1080/15563650.2017.1388385)

Anderson BD, Seung H, Klein-Schwartz W. Trends in Types of Calls Managed by U.S. Poison Centers 2000-2015. *Clinical Toxicology*, 2018; 56(7):640-645. (doi: 10.1080/15563650.2017.1410170)

Cordeiro SK, Daro RC, Seung H, **Klein-Schwartz W, Kim HK.** Evolution of Clinical Characteristics and Outcomes of Synthetic Cannabinoid Receptor Agonist Exposure in the United States: Analysis of National Poison Data System Data from 2010 to 2015. *Addiction*, 2018;113(10):1850-1861. (doi: 10.1111/add.14281)

Leonard JB, Anderson B, Klein-Schwartz W. Does Getting High Hurt? Characterization of Cases of LSD and Psilocybin-containing Mushroom Exposures to National Poison Centers between 2000 and 2016. *Journal of Psychopharmacology*. 2018 Dec;32(12):1286-1294. (doi: 10.1177/0269881118793086)

Leonard JB, Klein-Schwartz W. The Others: Characterizing "Other" Therapeutic Errors Reported to a Poison Center. *Clinical Toxicology*, 2019 Jan 2:1-5. (doi: 10.1080/15563650.2018.1538520)

MARYLAND POISON CENTER STAFF

Executive Director

Bruce D. Anderson, PharmD, DABAT, FAACT

Assistant Director, Operations and Public Education

Angel Bivens, BS Pharm, MBA, CSPI

Interim Medical Directors

Hong Kim, MD, MPH

Elizabeth Quaals Hines, MD

Professor Emeritus

Wendy Klein-Schwartz, PharmD, MPH, FAACT

Clinical Toxicology Fellow

James Leonard, PharmD

Coordinator of Health Professional Education

Eric Schuetz, BS Pharm, CSPI

Communications and Public Education Specialists

Whitney Pennington, MPH

Emily Paterson, BS, CHES

Senior IT Specialist

Larry Gonzales, BS

LAN Administrator

Pedro Gamez

Quality Assurance Specialist

Lyn Goodrich, BSN, RN, CSPI

Specialists in Poison Information

Lisa Aukland, PharmD, CSPI

Lisa Booze, PharmD, CSPI

Denise Couch, BSN, RN, CSPI

Josh Dennis, PharmD

Amber Ferrell, PharmD

Laura Hignutt, PharmD, BCPS, CSPI

Michael Hiotis, PharmD, CSPI

Michael Joines, BS Pharm, CSPI

Jennifer Malloy, PharmD, MPH, CSPI

Rebecca Mestas, PharmD

Heather Mialki, PharmD

Elizabeth Millwee, BSN, RN, CSPI

Kevin Simmons, BSN, RN, CSPI

Chris Wolff, PharmD, CSPI

Jeanne Wunderer, BS Pharm, CSPI

Program Administrative Specialist

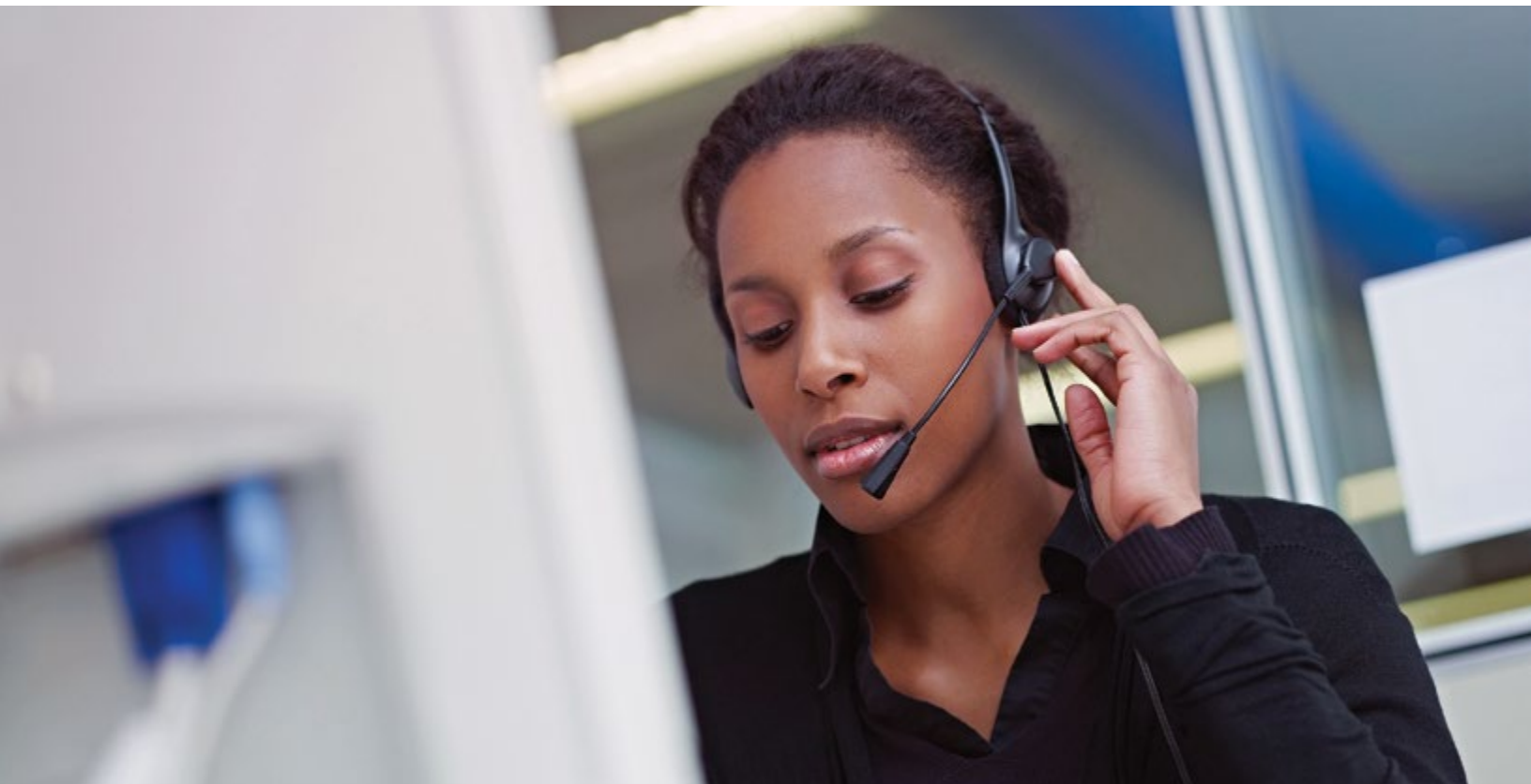
Connie Mitchell

Program Management Specialist

Nicole Dorsey

Office Assistant

Darren Stokes



ACKNOWLEDGEMENTS

The following organizations deserve special thanks for their continued support of the Maryland Poison Center:

- University of Maryland School of Pharmacy
- University System of Maryland
- Maryland Department of Health
- U.S. Department of Health and Human Services, Health Resources and Services Administration
- Maryland Institute for Emergency Medical Services Systems (MIEMSS)
- Priority Partners MCO
- Safe Kids Maryland State and Local Coalitions
- PharmCon, Inc.
- Baltimore County Department of Aging
- Partnership for a Safer Maryland



The MPC was involved in approximately 1,000 reports of bystander naloxone use.

In 2018, there were 993 instances of bystander naloxone use reported to the MPC. Calls or reports of bystander naloxone administration came from all counties in the state. The vast majority of reports were from police officers (66%).





Call 410-706-7604
or
www.mdpoison.com

to see how you can
support the
Maryland Poison Center.

