

2018 Annual Report of the University of Kansas Health System Poison Control Center

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ABSTRACT

Introduction. This is the 2018 Annual Report of the Kansas Poison Control Center at The University of Kansas Health System (KSPCC). The KSPCC serves the state of Kansas 24-hours per day, 365 days a year with certified specialists in poison information and clinical and medical toxicologists.

Methods. All encounters reported to the KSPCC from January 1, 2018 through December 31, 2018 were analyzed. Data recorded for each exposure included caller location, age, weight, gender, exposure substance, nature of exposure, route of exposure, interventions, medical outcome, disposition, and location of care.

Results. There were 21,072 total encounters, including 20,031 human exposure cases. Calls were received from every county and hospital in Kansas. Most of the exposures involved females (51.5%, $n = 10,320$) and a child less than 19 year of age (64%, $n = 12,865$). Medical outcomes were 24.5% ($n = 4,912$) no effect, 17.7% ($n = 3,542$) minor effect, 9.1% ($n = 1,830$) moderate effect, and 2.4% ($n = 476$) major effect. Seven deaths were reported in 2018. The number of exposure calls from healthcare facilities and severity of medical outcomes increased in 2018 compared to 2017.

Conclusion. The 2018 KSPCC annual report demonstrated that the center receives calls from the entire state of Kansas totaling over 20,000 human exposures. While pediatric exposures remain the most common encounter, a trend continued of an increasing number of calls from healthcare facilities and for cases with serious outcomes. This report supported the continued value of the KSPCC to both public and acute health care in the state of Kansas.

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INTRODUCTION

This is the 2018 Annual Report of Kansas Poison Control Center at The University of Kansas Health System (KSPCC). The KSPCC is a 24-hour, 365 day-a-year health care information resource serving the state of Kansas. It was founded in 1982 and is one of the 55 poison control centers certified by the American Association of Poison Control Centers (AAPCC) in the United States. The KSPCC is staffed by nine certified specialists in poison information who are either critical care trained nurses or doctors of pharmacy. There is 24-hour back-up provided by board certified clinical and medical toxicologists.

The KSPCC receives calls from the public, law enforcement, health care professionals, and public health agencies. Encounters may involve an exposed animal or human (Exposure Call) or a request for information with no known exposure (Information Call). The KSPCC follows all cases to make management recommendations, monitor case progress, and document medical outcome. This information is recorded electronically in the Toxicall® data management system and uploaded in near real-time to the National Poison Data System (NPDS).

NPDS is the data warehouse for all the nation's poison control centers.¹ The average time to upload data for all poison centers is 8.07 [7.32, 12.65] (median [25%, 75%]) minutes, creating a near real-time national exposure database and surveillance system. The KSPCC has the ability to share NPDS real time surveillance with state and local health departments and other regulatory agencies. An analysis and summary of all encounters reported to the KSPCC from January 1, 2018 through December 31, 2018 follows.

METHODS

All KSPCC encounters recorded electronically in the Toxicall® data management system from January 1, 2018 to December 31, 2018 were analyzed. Cases were first classified as either an exposure or suspected exposure (Human Exposure, Animal Exposure, Non-Exposure Confirmed Cases) or a request for information with no reported exposure (Information Call). Data extracted included: caller location, age, weight, gender, exposure substance, number of follow up calls, nature of exposure (unintentional, recreational, or intentional), exposure scenario, route of exposure (oral, dermal, parenteral), interventions, medical outcome (no effect, minor, moderate, severe or death), disposition (admitted to noncritical care unit, admitted to critical care unit, admitted to psychiatry unit, lost to follow-up, or treated and released) and location of care (non-health care facility or health care facility).

For this analysis a pediatric case was defined as any patient 19 years of age or less. This is consistent with NPDS methodology. Similarly, NPDS descriptions of the medical outcomes of cases were used. Minor outcomes are defined as minimally bothersome symptoms while moderate outcomes are more pronounced symptoms, usually requiring treatment, and major outcomes are life threatening signs and symptoms. Data was analyzed using Microsoft® Excel (Microsoft Corp, Redmond, WA).

RESULTS

The KSPCC logged 21,072 total calls in 2018, including 20,031 human exposure cases, 74 non-exposure confirmed cases, 92 animal exposure cases, and 875 information calls. This was a decrease of 359 calls (1.7%) compared to 2017. For information calls, drug information ($n = 285$) was the most common reason for calling. Table 1 further describes the encounter types. The KSPCC made 30,589 follow-up calls in 2018. Follow-up calls were done in 54.5% of human exposure cases. One follow-up call was made in 23.1% of human exposure cases and multiple follow-up calls (range 2 - 45) were made in 31.4% of cases. In human exposure calls for which follow-up calls were made, an average of 2.8 calls per case were performed, which was a 5% increase over 2017.

Table I. Encounter type.

	Number	%
Exposure		
Human exposure	20,031	99.5
Animal exposure	92	0.5
Subtotal	20,123	95.5
Non-Exposure Confirmed Cases		
Human non-exposure	74	0.4
Subtotal	74	0.4
Information Call		
Drug information	285	32.6
Drug identification	94	10.7
Environmental information	97	11.1
Medical information	27	3.1
Occupational information	3	0.3
Poison information	85	9.7
Prevention / Safety / Education	19	2.2
Teratogenicity information	6	0.7
Other information	44	5.0
Substance abuse	7	0.8
Administrative	19	2.2
Caller referred	189	21.6
Subtotal	875	4.1
Total	21,072	100.0

The KSPCC received calls from all 105 counties and every hospital in Kansas. The county with the largest number of calls was Sedgwick County with 3,218. In addition, calls were received from 46 states, the District of Columbia, and the U.S. Virgin Islands, while eight calls came from foreign countries including Mexico and Thailand.

Overall, a slight majority of human exposure cases (51.5%, n = 10,320) were female. In children younger than 13 years of age, most encounters involved a male, but this gender distribution was reversed in teenagers and adults. Approximately 64% (n = 12,865) of human exposures involved a child (defined as age 19 years or less). Table 2 illustrates distribution of human exposures by age and gender.

Patients one year of age were the most common age group involved in encounters reported to the KSPCC. For adults, the age group of 20-29 years old was most commonly encountered. Seventy-three exposures occurred in pregnant women (0.4% of all human exposures). Of these exposures, 31.5% occurred in the first trimester, 37% occurred in the second trimester, and 28.8% occurred in the third trimester. Most of the pregnancy exposures (n = 44, 60.3%) were unintentional exposures, but there were 21 (28.8%) intentional exposures. There were no reported deaths to KSPCC in pregnant women in 2018.

For human exposures, 67.2% (n = 13,455) of calls originated from a residence (own or other), while 93.5% (n = 18,731) of these exposures occurred at a residence (own or other). Calls from a health care facility accounted for 25.8% (n = 5,168) of human exposure encounters. Table 3 further details the origin of human exposure calls and where the exposure took place.

The majority of human exposures, 85.6 % (n = 17,150), were acute cases defined as exposures occurring over eight hours or less. Chronic exposures (exposures occurring over eight hours) accounted for 2.0% (404) of all human exposures reported. Acute on chronic exposures (single exposure that was preceded by a chronic exposure over eight hours) totaled 2,382 (11.9%). Ingestion was the most common route of exposure documented (81.9%, n = 17,554) in all cases. Table 4 further details the routes of exposures.

The most common reported substance in those less than six years of age was cosmetics/personal care products (n = 1,134) followed closely by household cleaning products (n = 1,125). For adult (> 19 years of age) encounters, analgesics (n = 1,210) and sedatives/hypnotics/antipsychotics (n = 1,147) were the most frequently involved substances. Among all encounters, analgesics (n = 2,867, 11.6%) were the most frequently encountered substance category. Table 5 lists most frequently encountered substance categories for pediatric encounters and Table 6 lists those for adult encounters. Appendix A is a summary log for all exposures categorized by category and subcategory of substance (available at journals.ku.edu/kjm).

There was a total of 316 plant exposures reported to the KSPCC. The most common plant exposure encountered was to pokeweed (*Phytolacca Americana*; n = 44). Table 7 lists the top five most encountered plants.

Unintentional exposures were the most common reason for exposures (76.7%, n = 15,364), while intentional exposures accounted for 20.7% (n = 4,140) of exposures. Table 8 lists reasons for human exposures. A majority of unintentional exposures, 63.5% (n = 9,759), occurred in the ≤ 5-year-old age group. Up to 12 years of age, 98.2% (n = 10,830) of ingestions were unintentional. However, in the 13 - 19-year-old group, intentional exposure was most common (69.5%, n = 1,277). In total, suspected suicide attempts accounted for 15.7% (n = 3,138) of human encounters. When a therapeutic error was the reason for exposure, a double dose was the most common scenario, 30% (n = 760). Table 8 demonstrates all reasons for human exposures.

Most encounters (67.4%, n = 13,503) were managed in a non-health care facility (i.e., a residence). Of the 6,321 encounters managed at a health care facility, 46.1% (n = 2,904) were admitted. Table 9 lists the management site of all human encounters.

Among human exposures, 15,132 involved exposures to pharmaceutical agents, while 9,510 involved exposure to non-pharmaceuticals. Because an encounter could include numerous pharmaceutical agents and non-pharmaceutical agents, this total is greater than the total number of encounters. However, 86.8% (n = 17,389) of all human exposures were exposed to only a single substance. Among these single substance exposures, the reason for exposure was intentional in 24.5% (n = 2,188) of pharmaceutical-only cases compared to 3.8% (n = 323) of non-pharmaceutical single substance exposures.

Table 2. Distribution of human exposures by age and gender.

Age (yrs.)	Male		Female		Unknown Gender		Total		Cumulative Total	
	N	% of age group total	N	% of age group total	N	% of age group total	N	% of total exposure	N	%
< 1 year	595	54.09	503	45.73	2	0.18	1,100	5.49	1,100	5.49
1 year	1,674	52.81	1,494	47.13	2	0.06	3,170	15.83	4,270	21.32
2 years	1,548	51.48	1,457	48.45	2	0.07	3,007	15.01	7,277	36.33
3 years	798	56.80	607	43.20	0	0.00	1,405	7.01	8,682	43.34
4 years	400	55.56	317	44.03	3	0.42	720	3.59	9,402	46.94
5 years	238	60.41	156	39.59	0	0.00	394	1.97	9,796	48.90
Unknown ≤ 5 years	0	0.00	1	100.00	0	0.00	1	0.00	9,797	48.91
Child 6-12 years	689	56.34	531	43.42	3	0.25	1,223	6.11	11,020	55.01
Teen 13-19 years	660	35.91	1,177	64.04	1	0.05	1,838	9.18	12,858	64.19
Unknown Child	1	14.29	3	42.86	3	42.86	7	0.03	12,865	64.23
Subtotal	6,603	51.33	6,246	48.55	16	0.12	12,865	64.23	12,865	64.23
20-29 years	862	46.15	1,006	53.85	0	0.00	1,868	9.33	14,733	73.55
30-39 years	678	43.80	867	56.01	3	0.19	1,548	7.73	16,281	81.28
40-49 years	415	39.79	626	60.02	2	0.19	1,043	5.21	17,324	86.49
50-59 years	387	40.40	570	59.50	1	0.10	958	4.78	18,282	91.27
60-69 years	343	42.77	458	57.11	1	0.12	802	4.00	19,084	95.27
70-79 years	221	42.75	296	57.25	0	0.00	517	2.58	19,601	97.85
80-89 years	88	36.97	150	63.03	0	0.00	238	1.19	19,839	99.04
≥ 90 years	18	40.91	26	59.09	0	0.00	44	0.22	19,883	99.26
Unknown adult	48	41.74	67	58.26	0	0.00	115	0.57	19,998	99.84
Subtotal	3,060	42.90	4,066	57.00	7	0.10	7,133	35.61	19,998	99.84
Unknown age	12	36.36	8	24.24	13	39.39	33	0.16	20,031	100.00
Total*	9,675	48.30	10,320	51.52	36	0.18	20,031	100.00	20,031	100.00

*Total includes 33 unknown age cases.

Table 3. Origin of call and site of exposure for human exposure cases.

Site	Origin of Call		Site of Exposure	
	N	%	N	%
Residence				
Own	13,110	65.45	18,064	90.18
Other	345	1.72	667	3.33
Workplace	307	1.53	443	2.21
Health care facility	5,168	25.80	75	0.37
School	38	0.19	271	1.35
Restaurant/food service	4	0.02	36	0.18
Public area	75	0.37	161	0.80
Other	963	4.81	222	1.11
Unknown	21	0.10	92	0.46

Table 4. Route of human exposures.

Route	Human Exposures		
	N	% of All Routes	% of All Cases
Ingestion	17,554	81.94	87.63
Dermal	1,577	7.36	7.87
Inhalation/nasal	1,014	4.73	5.06
Ocular	709	3.31	3.54
Bite/sting	190	0.89	0.95
Unknown	172	0.80	0.86
Parenteral	156	0.73	0.78
Other	17	0.08	0.08
Otic	13	0.06	0.06
Rectal	10	0.05	0.05
Aspiration (with ingestion)	5	0.02	0.02
Vaginal	5	0.02	0.02
Total Number of Routes	21,422*	100.00	106.94*

*Some cases may have multiple routes of exposure documented.

Table 5. Substance categories most frequently involved in exposure for age ≤ 5 years old.

Substance Category	All Substance	%	Single Substance Exposures	%
Cosmetics/Personal Care Products	1,134	11.04	1,110	11.69
Cleaning substances (Household)	1,125	10.96	1,080	11.37
Analgesics	925	9.01	853	8.98
Foreign bodies/toys/miscellaneous	587	5.72	575	6.05
Antihistamines	578	5.63	512	5.39
Dietary supplements/herbals/homeopathic	472	4.60	437	4.60
Vitamins	451	4.39	404	4.25
Topical preparations	441	4.29	434	4.57
Pesticides	386	3.76	377	3.97
Gastrointestinal preparations	281	2.74	254	2.67
Cold and cough preparations	226	2.20	209	2.20
Cardiovascular drugs	222	2.16	151	1.59
Essential oils	215	2.09	208	2.19
Antimicrobials	204	1.99	189	1.99
Plants	201	1.96	196	2.06

Table 6. Substance categories most frequently involved in exposures of adults (≥ 20 years).

Substance Category	All Substance	%	Single Substance Exposures	%
Analgesics	1,210	11.50	559	10.45
Sedative/hypnotics/antipsychotics	1,147	10.91	315	5.89
Antidepressants	955	9.08	311	5.81
Cardiovascular drugs	761	7.24	249	4.65
Alcohols	535	5.09	67	1.25
Antihistamines	471	4.48	202	3.77
Anticonvulsants	463	4.40	142	2.65
Cleaning substances (Household)	445	4.23	348	6.50
Pesticides	366	3.48	327	6.11
Hormones and hormone antagonists	328	3.12	175	3.27
Stimulants and street drugs	303	2.88	131	2.45
Chemicals	244	2.32	206	3.85
Cosmetics/personal care products	224	2.13	198	3.70
Fumes/gases/vapors	212	2.02	190	3.55
Muscle relaxants	210	2.00	68	1.27

Table 7. Top 5 most frequent plant exposures.

Botanical Name or Category	N
Phytolacca americana (L.) (Botanic name)	44
Cherry (Species unspecified)	18
Plants -Toxicodendrol	16
Philodendron (Species unspecified)	13
Spathiphyllum species (Botanic name)	10
Plants-general-unknown	22

Table 8. Reason for human exposure cases.

Unintentional		
Unintentional - general	10,383	51.8
Unintentional - therapeutic error	2,446	12.2
Unintentional - misuse	1,381	6.9
Unintentional - environmental	485	2.4
Unintentional - occupational	325	1.6
Unintentional - bite/sting	191	1.0
Unintentional - food poisoning	139	0.7
Unintentional - unknown	14	0.1
Subtotal	15,364	76.7
Intentional		
Intentional - suspected suicide	3,138	15.7
Intentional - misuse	533	2.7
Intentional - abuse	382	1.9
Intentional - unknown	87	0.4
Subtotal	4,140	20.7
Adverse reaction		
Adverse reaction - drug	249	1.2
Adverse reaction - other	56	0.3
Adverse reaction - food	49	0.2
Subtotal	354	1.8
Unknown		
Unknown reason	90	0.4
Subtotal	90	0.4
Other		
Other - malicious	52	0.3
Other - withdrawal	19	0.1
Other - contamination/tampering	12	0.1
Subtotal	83	0.4
Total	20,031	100.0

Table 9. Management site of human exposures.

Site of Management	N	%
Managed in healthcare facility		
Treated/evaluated and released	3,211	16.0
Admitted to critical care unit	1,520	7.6
Admitted to noncritical care unit	826	4.1
Admitted to psychiatric facility	558	2.8
Patient lost to follow-up/left AMA	206	1.0
Subtotal (managed in Healthcare facility)	6,321	31.6
Managed on site, non-health care facility	13,503	67.4
Other	15	0.1
Refused referral	177	0.9
Unknown	15	0.1
Total	20,031	100.0

When medical outcomes were analyzed, 24.5% (n = 4,912) of human exposures had no effect, 17.7% (n = 3,542) had minor effect, 9.1% (n = 1,830) had moderate effect, and 2.4% (n = 476) major effect. Moderate effects were more common in the 13 - 19-year-old group, while major effects were more common in those over 20 years of age. Moderate and major effects were most common in those with intentional encounters. More serious outcomes were related to single-substance pharmaceutical exposures, accounting for 42.9% (n = 3) of the fatalities. Table 10 lists all medical outcomes by age and Table 11 lists outcomes by reason for exposure.

Use of decontamination and specific therapies, including antidotal therapy, is detailed in tables 12a and 12b.

There were seven deaths in 2018 reported to the KSPCC. All deaths involved patients 20 years of age or older. Five of the deaths involved intentional exposures. Table 13 details the seven reported deaths.

Table 14 compares key statistics from 2015 to 2018. Total number of calls has declined since 2016. However, number of exposures calls from healthcare facilities and those involving moderate or major outcomes have steadily increased from 2015 to 2018. The number of reported deaths decreased from 2017 to 2018.

Table 10. Medical outcome of human exposure cases by patient age.

Outcome	≤ 5 Years		6-12 Years		13-19 Years		≥ 20 Years		Unknown Child		Unknown Adult		Unknown Age		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
No effect	2,962	30.23	254	20.77	478	26.01	1,203	17.14	3	42.86	8	6.96	4	12.1	4,912	24.52
Minor effect	1,008	10.29	238	19.46	530	28.84	1,736	24.74	1	14.29	25	21.74	4	12.1	3,542	17.68
Moderate effect	112	1.14	52	4.25	360	19.59	1,298	18.50	0	0.00	3	2.61	5	15.2	1,830	9.14
Major effect	14	0.14	3	0.25	82	4.46	375	5.34	0	0.00	1	0.87	1	3.0	476	2.38
Death	0	0.00	0	0.00	0	0.00	7	0.10	0	0.00	0	0.00	0	0.0	7	0.03
No follow-up, nontoxic	341	3.48	44	3.60	5	0.27	39	0.56	0	0.00	1	0.87	0	0.0	430	2.15
No follow-up, minimal toxicity	5,032	51.36	580	47.42	288	15.67	1,766	25.16	3	42.86	39	33.91	10	30.3	7,718	38.53
No follow-up, potentially toxic	230	2.35	15	1.23	55	2.99	282	4.02	0	0.00	29	25.22	9	27.3	620	3.10
Unrelated effect	98	1.00	37	3.03	40	2.18	312	4.45	0	0.00	9	7.83	0	0.0	496	2.48
Death, indirect report	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.0	0	0.00
Total	9,797	100.00	1,223	100.0	1,838	100.00	7,018	100.00	7	100.00	115	100.00	33	100.00	20,031	100.00

Table 11. Medical outcome by reason for exposure in human exposures.

Outcome	Unintentional		Intentional		Other		Adverse Reaction		Unknown		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Death	1	0.01	5	0.12	0	0.00	1	0.28	0	0.00	7	0.03
Death, indirect report	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Major effect	46	0.30	405	9.78	7	8.43	8	2.26	10	11.11	476	2.38
Minor effect	2,280	14.84	1,138	27.49	16	19.28	96	27.12	12	13.33	3,542	17.68
Moderate effect	540	3.51	1,194	28.84	19	22.89	55	15.54	22	24.44	1,830	9.14
No effect	3,900	25.38	983	23.74	5	6.02	13	3.67	11	12.22	4,912	24.52
No follow-up, nontoxic	420	2.73	7	0.17	0	0.00	1	0.28	2	2.22	430	2.15
No follow-up, minimal toxicity	7,422	48.31	179	4.32	17	20.48	94	26.55	6	6.67	7,718	38.53
No follow-up, potentially toxic	424	2.76	158	3.82	13	15.66	12	3.39	13	14.44	620	3.10
Unrelated effect	331	2.15	71	1.71	6	7.23	74	20.90	14	15.56	496	2.48
Total	15,364	100.00	4,140	100.00	83	100.00	354	100.00	90	100.00	20,031	100.00

Table 12a. Decontamination provided in human exposures by age.

Decontamination	≤ 5 Years	6-12 Years	13-19 Years	≥ 20 Years	Unknown Child	Unknown Adult	Unknown Age	Total
Cathartic	2	0	2	1	0	0	0	5
Charcoal, multiple doses	3	0	8	8	0	0	0	19
Charcoal, single dose	62	11	132	197	0	0	0	402
Dilute/irrigate/wash	7,404	727	402	2,531	2	47	10	11,123
Food/snack	1,436	132	85	422	2	5	1	2,083
Fresh air	68	52	32	419	0	19	9	599
Lavage	0	0	0	0	0	0	0	0
Other emetic	67	6	7	49	0	0	0	129
Whole bowel irrigation	0	0	1	13	0	0	0	14

Table 12b. Therapy provided in human exposures by age.

Therapy	≤ 5 Years	6-12 Years	13-19 Years	≥ 20 Years	Unknown Child	Unknown Adult	Unknown Age	Total
Decontamination								
Cathartic	2	0	2	1	0	0	0	5
Charcoal, multiple doses	3	0	8	8	0	0	0	19
Charcoal, single dose	62	11	132	197	0	0	0	402
Dilute/irrigate/wash	7,404	727	402	2,531	2	47	10	11,123
Food/snack	1,436	132	85	422	2	5	1	2,083
Fresh air	68	52	32	419	0	19	9	599
Ipecac	0	0	0	2	0	0	0	2
Other emetic	67	6	7	49	0	0	0	129
Whole bowel irrigation	0	0	1	13	0	0	0	14
Other Therapies								
Alkalinization	2	0	47	162	0	0	0	211
Antiarrhythmic	0	0	0	3	0	0	0	3
Antibiotics	17	9	15	171	0	0	0	212
Anticonvulsants	0	0	3	2	0	0	0	5
Antiemetics	13	11	121	255	0	0	0	400
Antihistamines	14	6	15	79	0	1	1	116
Antihypertensives	0	0	0	18	0	0	0	18
Antivenom (Immune Fab fragment) – Not Specified	1	3	2	22	0	0	0	28
Antivenom/antitoxin (Non-Fab) – Not Specified	0	2	0	8	0	0	0	10
Atropine	4	2	3	9	0	1	0	19
Benzodiazepines	12	7	109	345	0	0	1	474
Bronchodilators	5	6	7	67	0	1	0	86
Calcium	126	8	10	35	0	0	0	179
Cardioversion	0	0	0	1	0	0	0	1
Deferoxamine	0	0	0	1	0	0	0	1
Digoxin Immune Fab	0	0	0	12	0	0	0	12
EDTA	1	0	0	0	0	0	0	1
Ethanol	0	0	0	1	0	0	0	1
Extracorp. procedure (other)	0	0	0	1	0	0	0	1

Table 12b. Therapy provided in human exposures by age. *cont.*

Therapy	≤ 5 Years	6-12 Years	13-19 Years	≥ 20 Years	Unknown Child	Unknown Adult	Unknown Age	Total
Fluids, IV	53	31	525	1,535	0	3	0	2,147
Flumazenil	2	3	2	35	0	0	0	42
Folate	0	0	0	5	0	0	0	5
Fomepizole	0	1	1	24	0	0	0	26
Glucagon	1	0	3	25	0	1	0	30
Glucose, > 5%	3	0	5	48	0	1	0	57
Hemodialysis	0	0	1	24	0	0	0	25
Hyperbaric oxygen	0	0	0	4	0	0	0	4
Insulin	0	0	6	22	0	1	0	29
Intubation	3	0	30	205	0	1	0	239
Methylene blue	0	0	0	4	0	0	0	4
NAC, IV	3	4	76	177	0	0	0	260
NAC, PO	0	0	14	24	0	0	0	38
Nalmefene	0	0	0	1	0	0	0	1
Naloxone	10	3	28	139	0	1	0	181
Neuromuscular blocker	0	0	2	13	0	0	0	15
Octreotide	2	0	0	2	0	0	0	4
Other	42	27	98	534	0	2	0	703
Oxygen	9	4	52	435	0	1	4	505
Physostigmine	0	0	4	5	0	0	0	9
Phytonadione	1	0	7	21	0	0	0	29
Sedation (other)	7	1	33	213	0	0	0	254
Steroids	9	7	8	66	0	1	0	91
Succimer	7	0	0	7	0	0	0	14
Transplantation	0	0	0	1	0	0	0	1
Vasopressors	2	0	8	53	0	1	0	64
Ventilator	2	0	32	197	0	1	0	232

DISCUSSION

The 2018 Kansas Poison Control Center at The University of Kansas Health System's statistics are mirroring those seen nationally by the other 54 accredited poison control centers nationwide. In 2018, 2,530,238 encounters were logged by poison control, including 2,099,751 human exposures.¹ Overall encounters showed a 2.96% (n = 77,175) decline from 2017 to 2018, though healthcare facility human exposure cases decreased by only 0.261% from 2017. More serious outcomes (moderate, major or death) continue to increase. Nationwide, the five substance classes most frequently involved in adult exposures were analgesics, cleaning substances (household), cosmetics/personal care products, sedative/hypnotics/antipsychotics, and antidepressants, while the top five most common exposures in children age five years or less were cosmetics/personal care products, household cleaning substances, analgesics, foreign bodies/toys/miscellaneous, and topical preparations. There were 3,111 exposure related fatalities reported nationwide in 2018.

The KSPCC has served the state of Kansas continually 24 hours a day, 365 days a year for 37 years. By receiving over 20,000 calls per year, the KSPCC continues to be an important resource for emergency medical services, public health agencies, and health care facilities in Kansas. Childhood poisonings, both unintentional and intentional, remain a major focus since calls for patients under 19 years of age account for approximately 2/3 of all exposures. However, more serious hospitalized adult cases are becoming an increasing trend.

Table 13. Details on deaths and exposure related fatalities.

Age; Sex	Substances	Substance Rank	Cause Rank	Chronicity	Route	Reason	AAPCC RCF*
53;F	Acetaminophen/ Diphenhydramine	1	1	A/C	Ingestion	Intentional- unknown	3
	Metaxalone	2	2				
60;F	Theophylline	1	1	C	Ingestion	Adverse reaction - drug	3
34;M	Acetaminophen/ Dextromethorphan/Doxylamine	1	1	A	Ingestion	Intentional - suicide	3
	Tramadol	2	2				
39;F	Quetiapine	1	1	A	Ingestion	Unknown	4
	Trazodone	2	2				
	Duloxetine	3	3				
	Potassium Chloride	4	4				
	Drug, unknown	5	5				
65;M	Methamphetamine	1	1	A	Inhalation	Intentional -Abuse	3
59;M	Drug, unknown	1	1	A/C	Ingestion	Intentional - Suicide	6
69;F	Drug, unknown	1	1	A	Unknown	Intentional - Suicide	6
	Citalopram	2	2				
	Baclofen	3	3				

*American Association of Poison Control Centers Relative Contribution to Fatality

Table 14. 2015 to 2018 comparison of select statistics.

	2015	2016	2017	2018
Total cases	20,109	21,965	21,431	21,072
Calls from healthcare facility	4,267	4,514	4,892	5,224
Moderate or major outcomes	1,688	1,971	2,170	2,340
Deaths	13	15	16	7

The ongoing importance of the KSPCC is reflected in trends that have seen rates of poisonings and overdoses increase at an alarming rate over the last decade. According to the most current available data, drug poisoning-related hospitalizations in the United States have increased 26%.^{2,3} The National Center for Health Statistics noted over 67,000 overdose related deaths in 2018.⁴ Similarly, the KSPCC consistently has seen an increase in the number of calls from healthcare facilities and cases with moderate or major medical outcomes. Over the last four years, calls from healthcare facilities have increased by 21%. At the same time, calls involving moderate or major outcomes increased by 37%.

Several limitations must be noted when interpreting poison center data. Reporting exposures to the KSPCC is voluntary and the KSPCC is not contacted regarding all poisonings in the state of Kansas. Furthermore, in a majority of cases, there is no objective confirmation of exposure.

CONCLUSIONS

The 2018 KSPCC annual report demonstrated that the center received over 20,000 human exposures called from the entire state of Kansas. While pediatric exposures remain the most common, there continued to be an increasing trend in the number of calls

from healthcare facilities and for cases with serious outcomes. In this regard, the experience of the KSPCC is similar to national data. This report supported the continued value of the KSPCC to both the public and healthcare professionals in the state of Kansas.

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