

National Battery Ingestion Hotline

1-800-498-8666

July 1, 2018 to June 30, 2019 Annual Report

Rocky Mountain Poison Center

777 Bannock Street, Mail Code 0180

Denver, Colorado 80204

Prepared by:

Shireen Banerji, PharmD (sbanerji@rmpdc.org)

Christopher Hoyte, MD (Christopher.Hoyte@ucdenver.edu)

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For administrative questions, call 303-389-1392

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EXECUTIVE SUMMARY

This report summarizes 1,970 human battery exposures reported to the Rocky Mountain Poison Center's National Battery Ingestion Hotline (NBIH) during the 12-month period from July 1, 2018 through June 30, 2019. Of these, 1,869 cases involved ingestion of a battery, and furthermore, 1,416 of these cases specifically involved ingestion of one or more disc batteries. See Figure 1 for case volume characterization during this 1-year period.

We compared the National Battery Ingestion Hotline disc battery ingestion data (Table 1) to the National Poison Data System (NPDS) (Table 2) over the same time period. There were a total of 4,476 human ingestion of disc batteries; 2,579 (58%) specifically involving children 0-6 years of age. The most common age in this range was 1 year old (n=929) followed by 2 year olds (n=592). In the age range of 6-12 years there were 401 cases. For teenagers (13-19 years) there were 160 cases. For cases involving 20-59 year olds, there were 584 cases, and there were 640 cases involving adults greater than 60 years.

Regarding exposures to disc battery ingestion reported to NPDS nationally, medical outcomes included 1,879 no effects, 367 minor effects, 263 moderate effects, and 54 major effects. There were no deaths reported. Of note, 85% of cases were either referred to or originated from healthcare facilities (HCF).

In children age 0-6 years, there were 2,579 disc battery ingestion exposures reported to NPDS during this same time period (Table 3). Medical outcomes included 1,152 no effects, 137 minor effects, 35 moderate effects, 11 major effects. There were no deaths reported. Similar to the overall NPDS data, 86% of cases were either referred to or originated from healthcare facilities.

Figure 2 shows a downward trend over the past 12 months in total human exposures to disc batteries as well as major outcomes and fatalities. We suspect this difference represents the general downward volume of calls to poison control centers and an increased promotion of the National Battery Ingestion Hotline and public awareness of the ingestion hazard. Of all of the cases reported to the hotline, Table 4 shows that the majority involved male patients. The most common age associated with reported cases was one year old followed by two years of age (Table 1). This follows age of patients' trends from previous years and was the same for disc battery ingestion and all types of batteries and routes (Figure 3). Additionally, it appears as though case numbers increase from young adult age ranges into patients who are 60, 70, and 80 years. This is likely due to exposures involving disc batteries used to power hearing aids as well as the smaller sizes of those disc batteries. Of all disc battery exposures, the disc battery type was unknown in 43% of cases (Figure 4). In 20% of cases alkaline disc batteries involving manganese oxide were involved. Also in another 20% of cases zinc-air batteries were involved.

Table 5 demonstrates that the location of the caller was unknown in the majority of cases (N=794). When the location of the caller (by state) was provided, California (310), Florida (273), and Texas (249) were the most common. This is unsurprising as these three states are the most populated by census in the United States. There were also 70 calls that originated from Canada. There were a small number of calls that originated from other countries around the world (Table 5). The most common caller site of human ingestion was the caller's own residence 69% (971) followed by healthcare facilities 23% (330) (Figure 5).

The most common medical outcome (Figure 6) reported that was associated with battery exposures [all routes, ingestion only] was no effect (1166, 1123) followed by minor (206, 170), moderate effect (40, 32), and major effect (10, 10). Of these cases, [181, 172] were lost to follow up. There was one fatality reported to the NBIH involving possible ingestion of a disc battery, but this suspicion was never confirmed. There were [314, 312] cases where it was confirmed that there was no exposure and there were [52, 49] cases where the caller reported signs and symptoms unrelated to battery exposure. Medical outcomes reported specifically involving disc battery ingestion were as follows: no effect (893) followed by minor (106), moderate effect (21), and major effect (9). Of these cases, 124 were lost to follow up and there was one fatality (Figure 6). There were 233 cases where it was confirmed that there was no exposure and there were 30 cases where the caller reported signs and symptoms unrelated to battery exposure. The other age ranges shown in the figures appear to follow the same proportions. The age group with the highest number of major outcomes was the 0-5 years range (n=6). Disc batteries were the most common battery type involved in human exposures. There were 1416 cases where disc battery ingestion was confirmed or suspected. The percentage of AA and AAA cylindrical alkaline battery exposure cases was similar (10% and 9% of total human exposures, respectively). When the source of the battery was known, hearing aids (381) were the most common devices associated with human battery exposures. Of note, 269 cases of battery exposure were associated with cases where the devices were unknown (Figure 7). Unsurprisingly, games/toys were involved in cases of disc battery exposure commonly (179). The most common size of disc batteries associated with human exposures was less than 12 mm (566) followed by unknown size (429) and 20 mm (89) (Figure 8).

The ingestion of disc batteries was previously thought to be a public health issue regarding children (0-5 years). The Battery Ingestion Hotline data demonstrate that patients greater than 60 years of age are also at risk of accidental disc battery ingestion due to increasing usage of hearing aid devices.

Prevention tips are available at <https://www.rmpds.org/mechanism-and-safety-tips.html>. For data prior to July 1, 2018, statistics can be found at www.poison.org/battery/stats.asp. Cases may be reported 24/7/365 to the National Battery Ingestion Hotline at 1-800-498-8666.

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Tables and Figures

Table 1. Battery Ingestion Hotline Exposures by Age Range and Gender, July 2018 to June 2019

Age (years)	Female	Male	Unknown Gender	Total (All Routes)	Ingestion Only
<1	34	50	0	84	57
1	195	221	3	419	302
2	110	148	3	261	199
3	70	109	3	182	133
4	46	69	0	115	92
5	29	35	0	64	54
Unk ≤ 5	0	1	0	1	1
6 to 12	49	143	1	193	145
13 to 19	35	34	1	70	30
Unknown Child	4	1	1	6	4
20's	25	30	0	55	12
30's	33	28	0	61	22
40's	15	15	0	30	13
50's	23	13	0	36	20
60's	49	44	0	93	80
70's	58	42	0	100	91
80's	53	37	0	90	83
≥ 90	30	30	0	60	60
Unknown Adult	18	10	6	34	12
Unknown Age	3	7	6	16	7
Total	879	1,067	24	1,970	1,417

Figure 1. Battery Ingestion Hotline Case Volume Characterization, July 2018 to June 2019

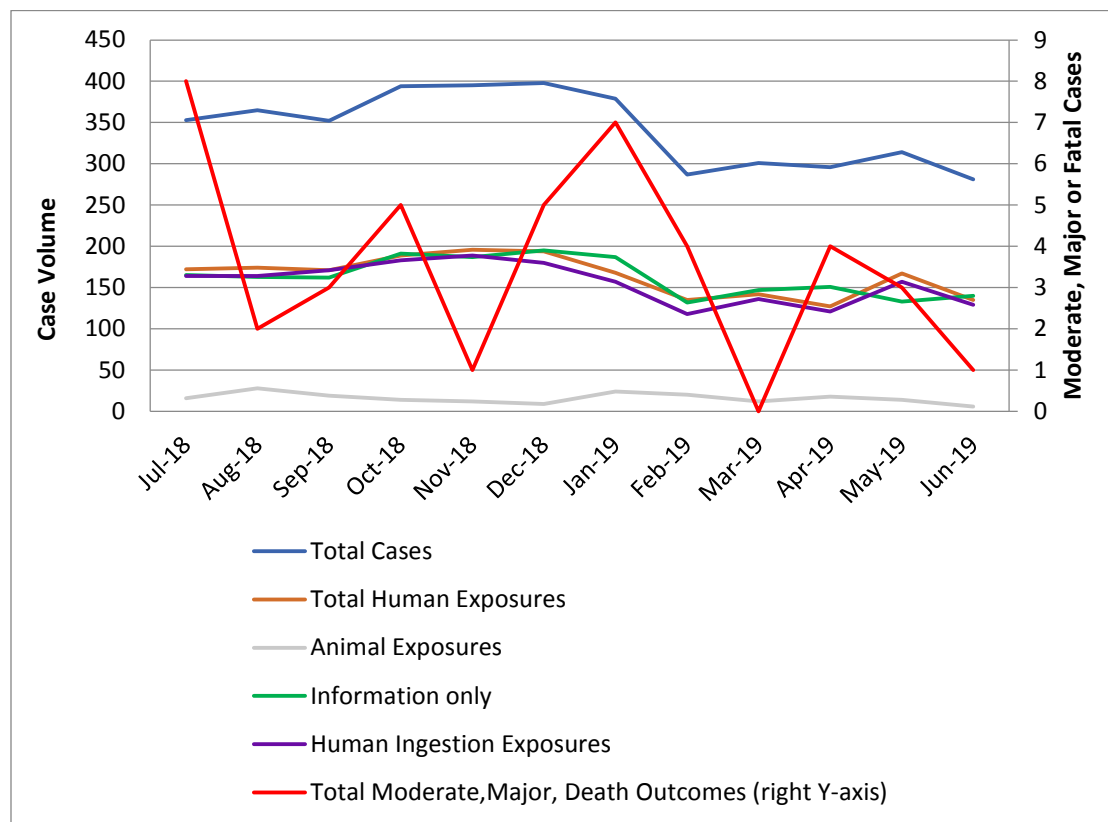


Table 2. National Poison Data System, Human Disc Battery Ingestion Exposures and Outcomes, July 2018 to June 2019, All Ages

Number of Ingestions	Age < 6 years	Age 6-12 years	Age 13-19 years	Age 20-59 years	Age > 60 years	% Treated in HCF	No Effect	Minor Effect	Moderate Effect	Major Effect	Death
4,476	2,579	401	160	584	640	85	1,879	367	263	54	0

Table 3. National Poison Data System, Human Disc Battery Ingestion Exposures and Outcomes, July 2018 to June 2019, Age 0 to 6 years

Number of Ingestions	% Treated in HCF	No Effect	Minor	Moderate	Major	Death
2,579	86	1,152	137	35	11	0

Figure 2. Battery Ingestion Hotline Exposure Trends, July 2018 to June 2019

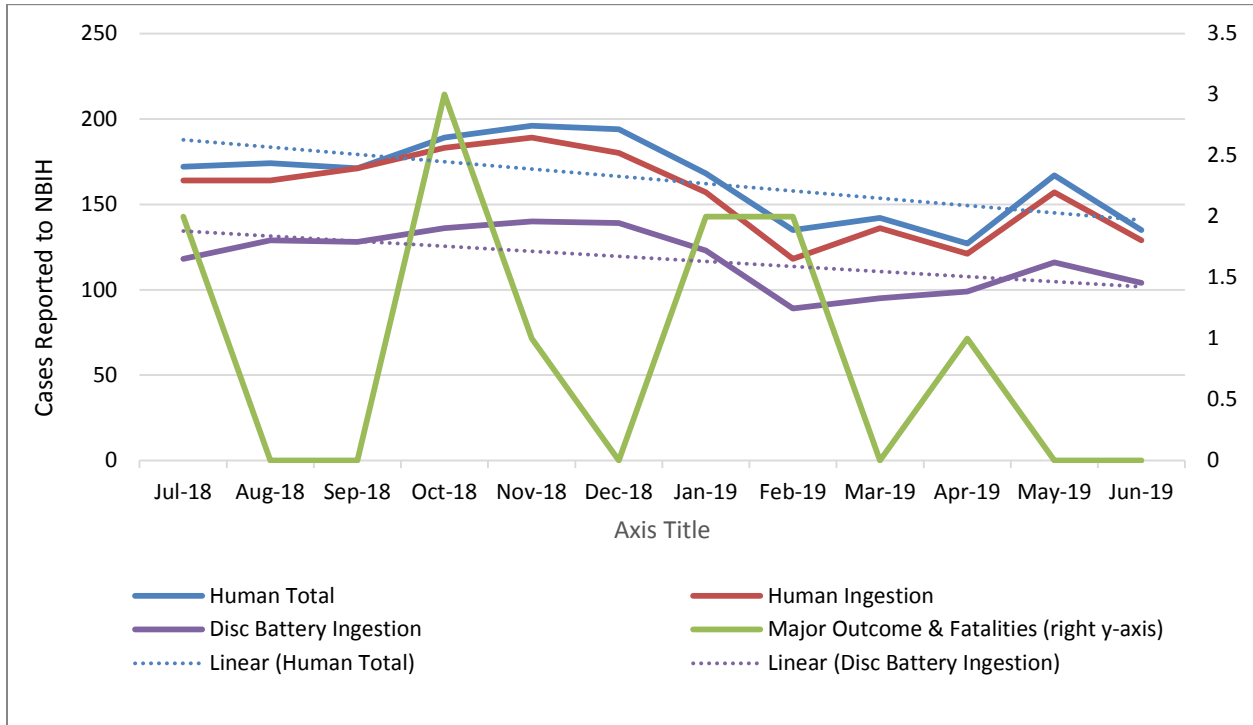


Table 4. Battery Ingestion Hotline Exposures by Gender, July 2018 to June 2019

Gender	Number of Exposures
Male	1067
Female	879
Unknown	24

Figure 3. Battery Exposure by Age Range and Type Reported to the Battery Ingestion Hotline, July 2018 to June 2019

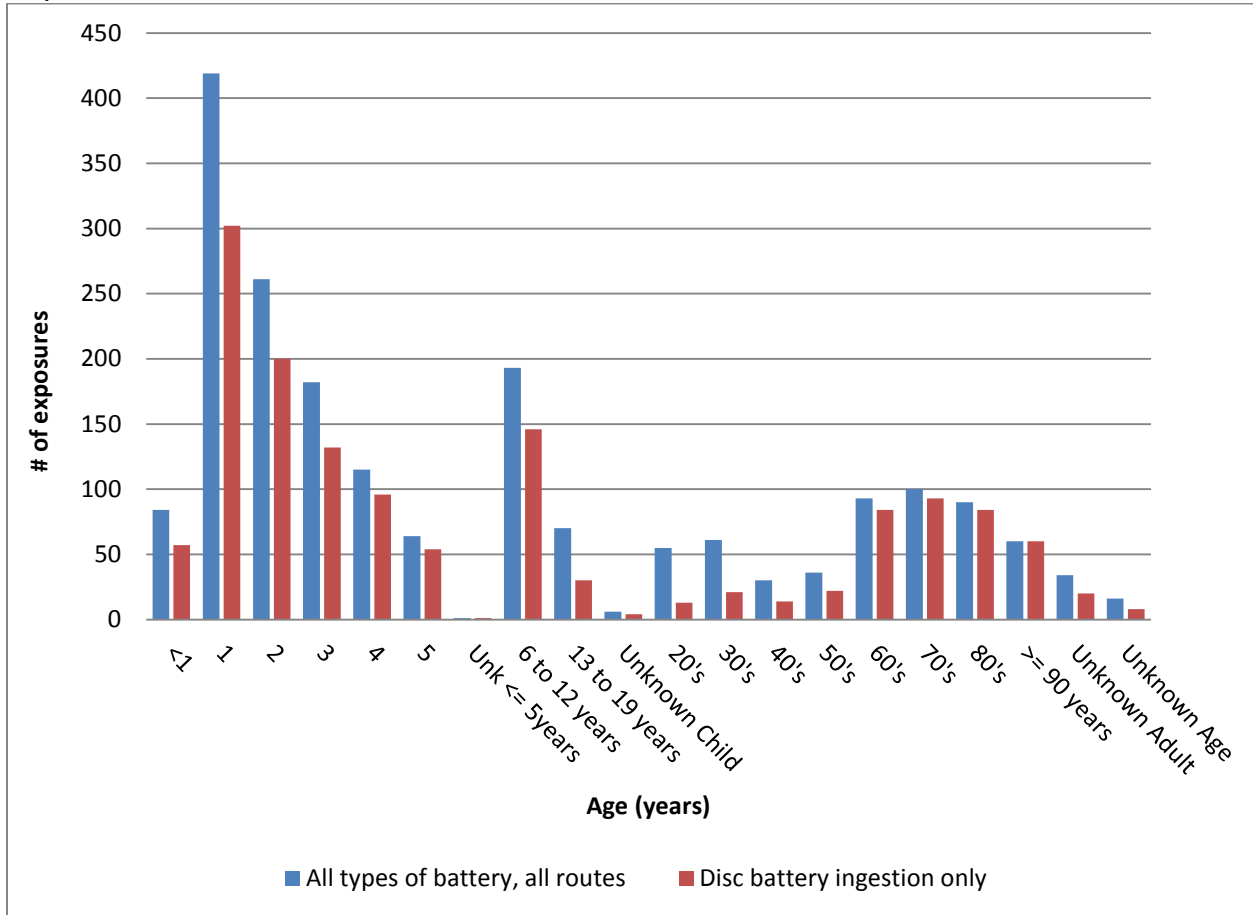


Figure 4. Disc Battery Ingestion by Types Reported to the Battery Ingestion Hotline, July 2018 to June 2019

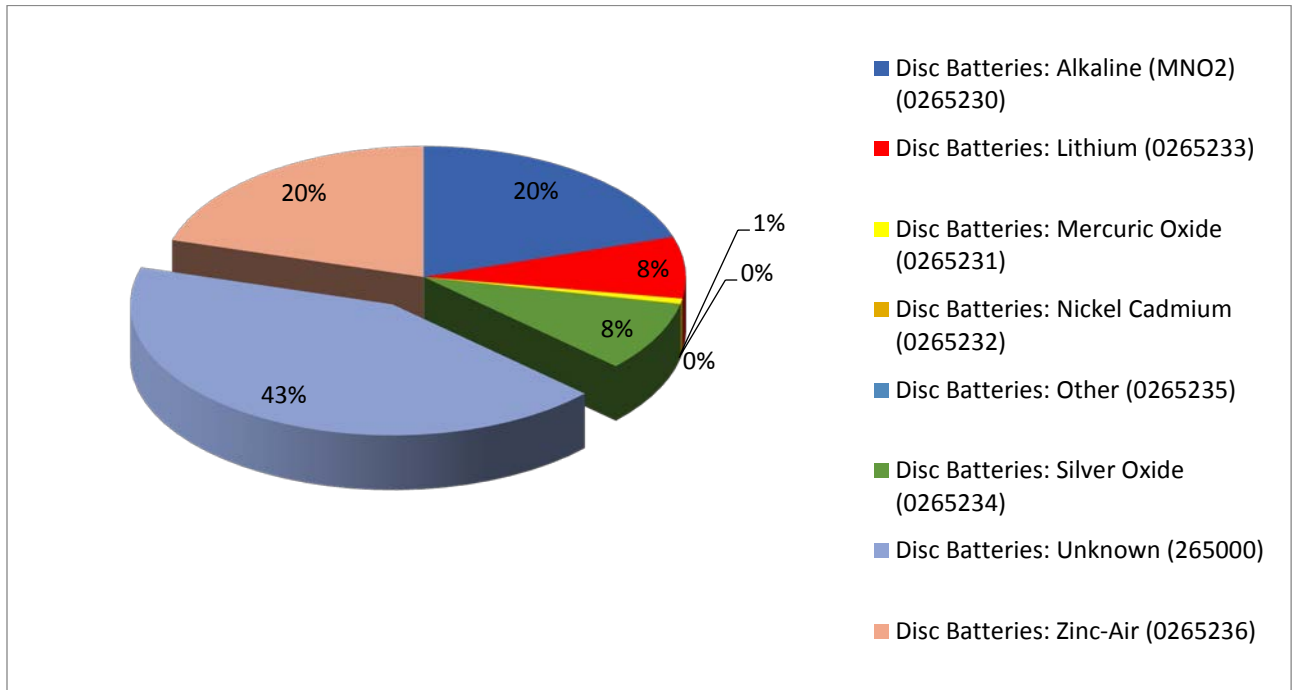


Table 5. Geographical Distribution of Caller by State, Reported to the Battery Ingestion Hotline, July 2018 to June 2019

State	Number of Cases	Country	Number of Cases
Alabama	38	Canada	70
Alaska	7	China	1
Arizona	88	England	1
Arkansas	25	India	2
California	310	Israel	1
Colorado	49	Italy	1
Connecticut	52	Jamaica	1
D.C.	18	Japan	2
Delaware	8	Kenya	1
Florida	273	Mexico	1
Georgia	89	Pakistan	1
Hawaii	7	Panama	1
Idaho	19	Spain	1
Illinois	111		
Indiana	82		
Iowa	37		
Kansas	25		
Kentucky	42		
Louisiana	52		
Maine	19		
Maryland	71		
Massachusetts	64		
Michigan	113		
Minnesota	54		
Mississippi	25		
Missouri	66		
Montana	11		
Nebraska	17		
Nevada	42		
New Hampshire	8		
New Jersey	103		
New Mexico	24		
New York	176		
North Carolina	101		
North Dakota	5		
Ohio	111		
Oklahoma	40		
Oregon	41		
Pennsylvania	121		
Puerto Rico	1		
Rhode Island	16		
South Carolina	41		
South Dakota	7		
Tennessee	67		
Texas	249		
Unknown	794		
Utah	36		
Vermont	3		
Virginia	84		
Washington	92		
West Virginia	17		
Wisconsin	74		
Wyoming	6		

Figure 5. Caller Site Location, Reported to the Battery Ingestion Hotline, July 2018 to June 2019

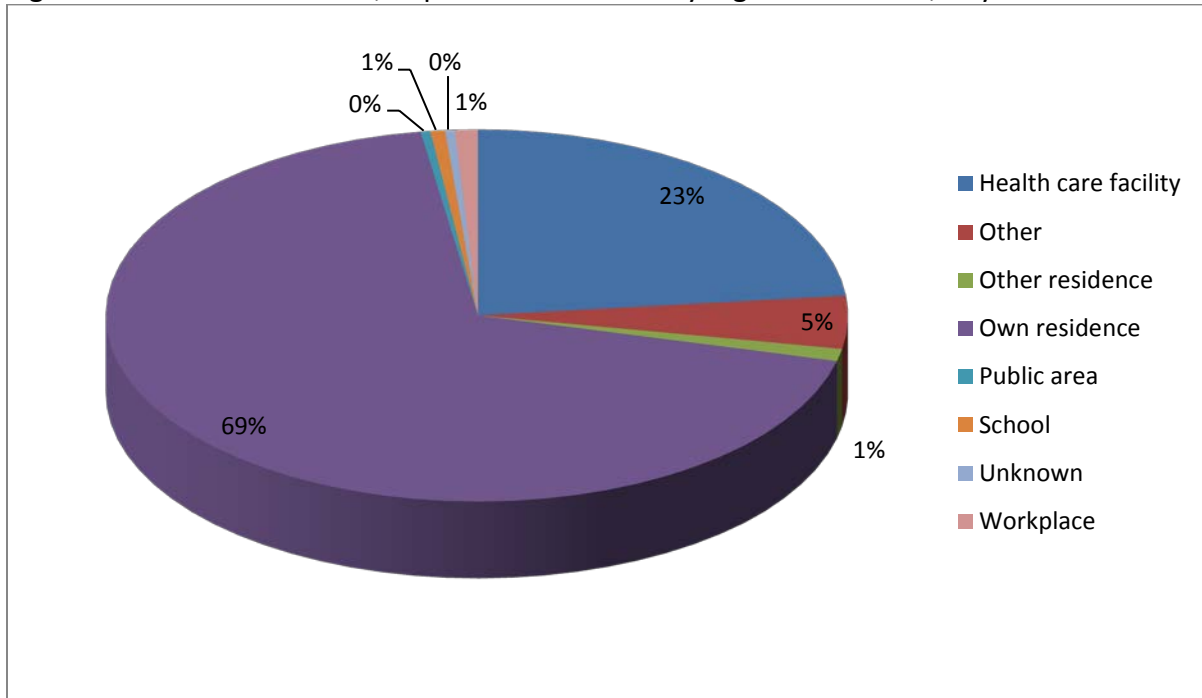


Figure 6. Medical Outcomes for Cases Reported to the Battery Ingestion Line, July 2018 to June 2019.

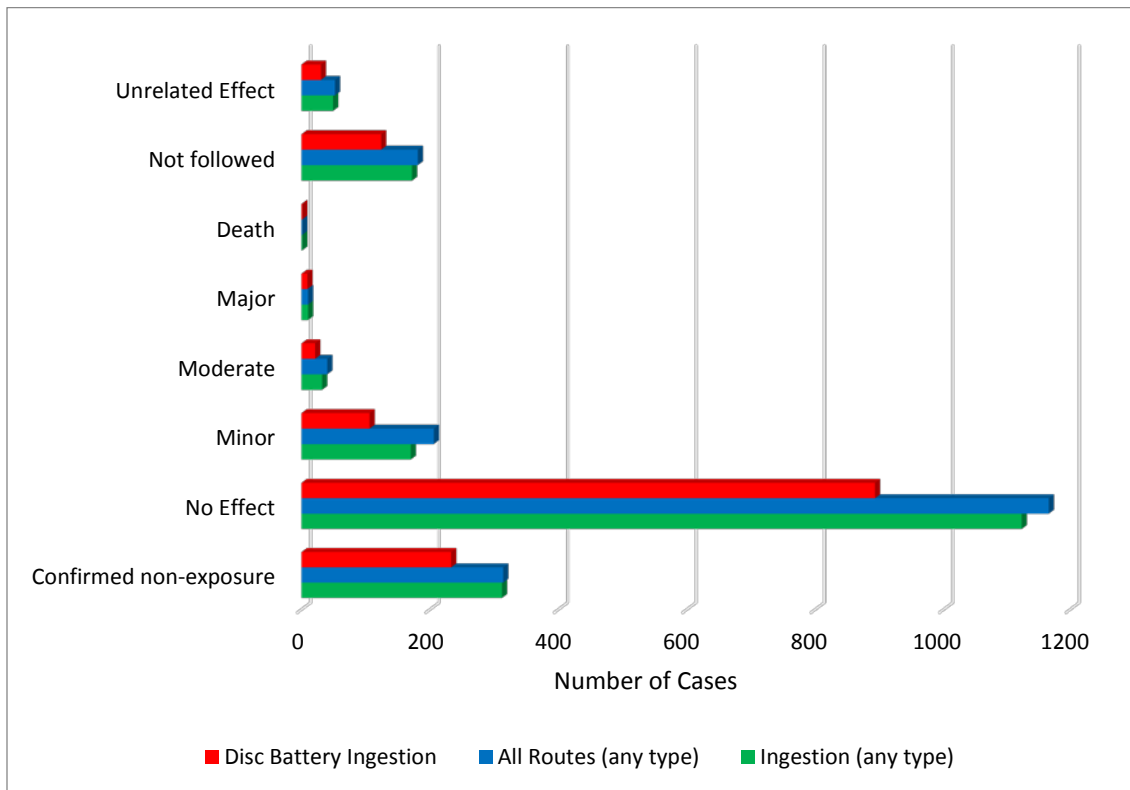


Figure 7. Battery Source by Device for Cases Reported to the Battery Ingestion Line, July 2018 to June 2019.

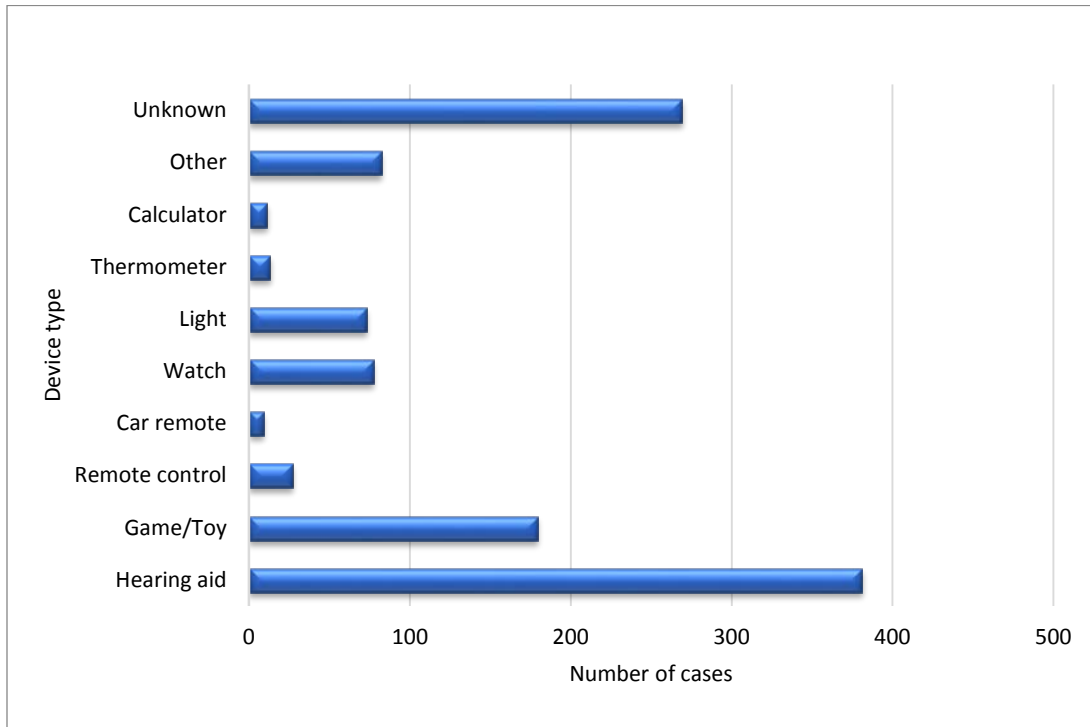


Figure 8. Battery Size, Cases Reported to the Battery Ingestion Line, July 2018 to June 2019.

