Poison Control Center Surveillance of Unintentional Laundry Detergent Exposures

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Introduction

Laundry detergent capsule (LDC) exposures have been an emerging public health event and appear to have a different exposure profile than traditional automatic laundry detergents. Each LDC contains 15 - 32 mL of concentrated surfactants in easy dissolvable polymer membranes. Membrane dissolution can be triggered by a variety of water sources including washers, saliva or moist hands. We compared LDC exposures to non-LDC such as powders and liquids. Manufacturers have initially modified packaging based on PC surveillance data.

Methods

We analyzed our laundry detergent exposures from 2009 – 2013 data by age, gender, call site, detergent type (LDC, powder, liquid, tabs, non-LDC unknown formulation), route, circumstances of exposure, management site, clinical effects and Poisoning Severity Score (Persson HE et al. J Toxicol Clin Toxicol 1998; 36(3): 205-13). The two exposure groups (LDC vs non-LDC) were compared using the Pearson X^2 or Fisher's exact test.

Summary of Results

	LDC		Non-LDC									
			Liquids		Powders		Tabs		Unknown		Total	
Unintentional exposures	1,492		1,062		323		67		310		1,762	
Year	n.	%	n.	%	n.	%	n.	%	n.	%	n.	%
2009	0	0.0	193	18.2	68	21.1	14	20.9	69	22.3	344	19.5
2010**	166	11.1	214	20.2	54	16.7	9	13.4	81	26.1	358	20.3
2011**	476	31.9	210	19.8	74	22.9	12	17.9	62	20.0	358	20.3
2012**	550	36.9	242	22.8	77	23.8	13	19.4	48	15.5	380	21.6
2013	300	20.1	203	19.1	50	15.5	19	28.4	50	16.1	322	18.3
Requesting counseling**												
Hospital	1,033	69.2	421	39.6	120	37.2	27	40.3	141	45.5	709	40.2
Citizens	458	30.7	641	60.4	203	62.9	39	58.2	168	54.2	1,051	59.7
Unknown	1	0.1	0	0.0	0	0.0	1	1.5	1	0.3	2	0.1
Age class**												
<5	1,338	89.7	856	80.6	270	83.6	57	85.1	260	83.9	1,443	81.9
5 - 9	113	7.6	32	3.0	14	4.3	2	3.0	14	4.5	62	3.5
10 - 19	12	0.8	11	1.0	1	0.3	1	1.5	4	1.3	17	1.0
20+	26	1.7	147	13.8	34	10.5	7	10.5	30	9.7	218	12.4
Unknown	3	0.2	16	1.5	4	1.2	0	0.0	2	0.7	22	1.2
Route of exposure												
Ingestion/oral mucosa	1,369	91.8	964	90.8	300	92.9	59	88.1	283	91.3	1,606	91.2
Ocular**	208	13.9	87	8.2	21	6.5	4	6.0	21	6.8	133	7.5
Skin*	112	7.5	59	5.6	19	5.9	4	6.0	20	6.5	102	5.8
Other	5	0.3	6	0.6	2	0.6	0	0.0	3	1.0	11	0.6
Unknown	0	0.0	1	0.1	0	0.0	0	0.0	1	0.3	2	0.1
Signs/symptoms**												
Not present/not associated	343	23.0	758	71.3	247	76.5	49	73.1	238	76.8	1,292	73.3
Present associated	1,138	76.3	291	27.4	71	22.0	18	26.9	67	21.6	447	25.4
Not available	11	0.7	13	1.2	5	1.5	0	0.0	5	1.6	23	1.3

* X^2 test with $p<0.05$ ** X^2 test with $p<0.01$

Results

During the study period 2009 – 2013, a total of 3,254 LDC and non-LDC enquiries were received. Of these, 46% (1,492) were LDCs, 33% (1,062) liquid detergents, 10% (323) powders, 2% (67) tabs, and 10% (310) unknown formulation. The route of exposure was primarily ingestion for both groups (LDC: 92%, non-LDC: 91%). LDC exposures 76% (1,138) had a higher number of clinical effects (oral irritation, vomiting, coughing, ocular hyperemia, and skin irritation) than non-LDC exposures 25% (447) (p <0.001) (see table). The percentage of Moderate\Severe poisonings is greater in the LDC exposure group (11%) than in the non-LDC group (4%) (Figure 2). No deaths were reported.

Conclusions

LDC exposures required hospital evaluation more often than non-LDC exposures due to more severe clinical effects. It is still too early to assess the results achieved by the modification of the packaging made on the recommendation of the PCC and the Ministry of Health, but this is an example of how data collected from the PCC can be used for surveillance and prevention of public health.

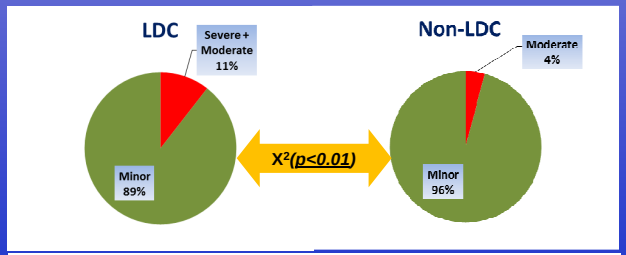

Figure 2. Distribuition of poisoning severity among the two groups of patients with signs\symptoms associated.

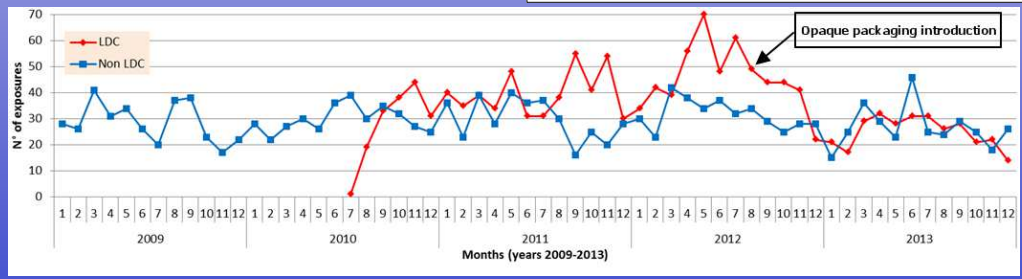

Figure 1. Number of exposures per month (years 2009-2013)