

# Transdermal Patch Medication Exposures Reported to Regional Poison Center; Ten-Year Experience

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## Introduction

- Transdermal patch medications (TPMs) are designed as sustained release drug delivery systems.
- To generate the concentration gradient necessary for dermal absorption, the amount of drug in patch formulations is high. Therefore TPM exposures may produce significant toxicity.

## Objective

- Describe TPM exposures reported to a single regional poison center.

## Methods

- We performed a retrospective descriptive study of closed, single-substance, human exposures coded to TPM medications from one regional poison center's data reported to the National Poison Data System (NPDS) from January 2005 - October 2014 (118 months).
- Case counts were analyzed by product, route, age, gender, exposure reason, clinical effect, therapies, and level of health care facility (HCF).

## Results

- 424 exposures were reported. Females predominated with 227 calls (54%).
- 138 calls (33%) were age ≤ five years.
- The most frequent substances were fentanyl (128 calls, 30%), nicotine (95calls, 22%), and salicylic acid (84calls, 20%).
- Main exposure routes were oral (46%) and dermal (46%).
- In cases age ≤ 5 years, oral ingestion is the main exposure (106 calls, 77%) route follow by dermal exposure (34 calls, 24%).
- There were 262 (62%) unintentional exposures, 79 (19%) intentional exposures, 75 (17%) adverse drug reactions, and 8 (2%) with other reasons.
- More than half (240, 57%) were symptomatic. The most common clinical effects were nausea, vomiting, and drowsiness/lethargy.
- No deaths were reported.
- About one-third (164, 39%) needed medical evaluation at health care facilities; 48 (11%) were admitted.
- Twenty-one patients (5%) were admitted to intensive care units with most (19/21, 90.5%) being fentanyl patch exposures. Seven of these 7/19 (36.8%) required intubation.

## Conclusions

- From one regional PC, the majority of TPM exposures were related to either fentanyl, nicotine, or salicylic acid.
- Most of intensive care unit admissions and intubations were related to fentanyl patches.

Table 1: number of TPM exposure call, HCF evaluation and admission

Substance	Exposure calls (n)	HCF evaluation (n, %)	Admission (n, %)
Fentanyl	128	95 (74%)	36 (28%)
Nicotine	95	31 (33%)	3 (3%)
Salicylic acid	84	6 (6%)	0
Lidocaine	35	9 (26%)	1 (3%)
Estradiol	12	0	0
Clonidine	10	8 (80%)	5 (50%)
Others	60	15 (25%)	3 (5%)
<b>Total</b>	<b>424</b>	<b>164 (39%)</b>	<b>48 (11%)</b>

Table 2: number of TPM exposure call, HCF evaluation and admission in patient age ≤ 5 years

Substance	Exposure calls (n)	HCF evaluation (n, %)	Admission (n, %)
Salicylic acid	61	3 (5%)	0
Nicotine	35	13 (37%)	1 (3%)
Fentanyl	9	4 (44%)	1 (11%)
Estradiol	8	0	0
Lidocaine	6	1 (17%)	1 (17%)
Clonidine	5	4 (80%)	2 (40%)
Others	14	2 (14%)	0
<b>Total</b>	<b>138</b>	<b>27 (20%)</b>	<b>5 (4%)</b>

Figure 1: Reason of TPM exposures

