

## Special Interest Articles:

- Adzenys XR-ODT
- Probuphine
- Loperamide abuse



## Did you know?

The FDA will now regulate e-cigarettes making them more difficult for minors to access and require some products to go through rigorous, scientific review. During 2011-2015, e-cigarette use rose 1.5 to 16.0 percent among high school students.

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## First Orally Disintegrating Tablet for ADHD in Kids

Adzenys XR-ODT® was released in the U.S. in May of 2016 and in June of 2016 the Regional Poison Control Center received its first exposure call involving Adzenys®. Adzenys® is amphetamine (base) as an extended-release orally disintegrating tablet and is used for the treatment of attention-deficit/hyperactivity disorder (ADHD) in children aged 6 years and older. Adzenys® comes in six different strengths, is orange flavored, and can be taken without water. The inaugural call was received from a healthcare professional. The case involved a two-year-old child who had ingested 4 tablets (3.1mg each) of Adzenys XR-ODT®, which were obtained by the child from an older sibling's pill planner. The total dose of Adzenys® (12.1 mg of amphetamine base) resulted in a potentially toxic dose. The toddler experienced vomiting and

tachycardia while being observed in an emergency department. The patient stated the medicine tasted good and after observation was later discharged home. Adzenys® is not currently on the CD-ROM version of Poisindex®. Please refer to the conversions listed below for Adderall XR® equivalent doses to Adzenys XR-ODT®.

### Equivalent Doses:

Adzenys XR-ODT	Adderall XR
3.1 mg	5 mg
6.3 mg	10 mg
9.4 mg	15 mg
12.5 mg	20 mg
15.7 mg	25 mg
18.8 mg	30 mg

### Reference

1. Adzenys XR-ODT Neos Therapeutics; Retrieved from: <http://adzenysxrodt.com/>

## Probuphine: New Drug in Fighting Opioid Dependence

Probuphine (pro-BYOO-feen) is the first buprenorphine implant to treat opioid dependence. Probuphine consists of four subdermal rods placed in the inner upper arm. Probuphine provides non-fluctuating blood levels of buprenorphine around the clock for a period of six months. It can be implanted once per arm for up to a 12 month treatment course. Trials indicate that patients who were clinically stable on 8mg or less of buprenorphine per day maintained stability when transferred to

Probuphine and were more likely to sustain abstinence from illicit opioids throughout the six months than those being treated with sublingual buprenorphine. Probuphine costs about \$10,000 per year which is about three times the cost of buprenorphine combos. There are some insurance companies considering covering it. This drug will not be dispensed by pharmacies. Eligible health care providers must get the necessary training and certification to prescribe Probuphine.

### References

1. Probuphine Pharmacist's Letter/Prescriber's Letter. March 2016; Volume 32
2. Probuphine- Titan Pharmaceuticals; Retrieved from: <http://www.titanpharm.com/pipeline/probuphine>.

## The “Poor Man’s Methadone”- A Look at Loperamide

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Loperamide is an anti-diarrheal medication under the brand names Imodium A-D® and Diamode®. It is available as both a liquid and tablet. The therapeutic dosage for an adult is up to 8 mg a day as an over-the-counter product and up to 16 mg a day as a prescription. Documentation of loperamide abuse has appeared in the literature as early as 2004 with a new trend of abuse and misuse of this medication growing since 2010. People have started using loperamide as an opioid alternative and/or to prevent opioid withdrawal, hence the term, the “Poor Man’s Methadone”.

To prevent opioid withdrawal, the patient must take approximately ten times the normal dose of loperamide. To achieve opioid effects even higher doses are needed. Another concern is that these patients are taking other drugs that may affect the metabolism of loperamide, to potentiate its effects, such as P-glycoprotein inhibitors (e.g. ginkgo

biloba, ketoconazole) and cytochrome P450 3A4 inhibitors (e.g. ciprofloxacin, grapefruit). When taking high doses, there are several symptoms/adverse effects of concern – cardiac conduction disturbances, cardiac dysrhythmias, CNS depression, respiratory depression, syncope, dytonias, nausea, vomiting, abdominal pain, headaches, and miosis. The most notable effects have been cardiac, i.e. QT/QRS interval prolongation, Torsades de Pointes, bradycardia, ventricular arrhythmias, and cardiac arrest.

Loperamide was approved by the FDA in 1976. Since then, there have been forty-eight cases of severe cardiac problems, of which ten resulted in death. The FDA believes that the number of deaths and cardiac events is likely a higher number as all occurrences are not reported to them. Abuse of loperamide has become such a trend due to the cheap cost and the ability to obtain it without a prescription.

#### References

1. Audi J, Layher J, Morgan B. Cardiac conduction disturbances secondary to chronic abuse of loperamide: an initial case report. *Clin Toxicol* 2004. 42 : 713 – 826 ; abstract 22.
2. Goldschmidt, Debra. “Why FDA is warning people bout Imodium overdoses”. Retrieved from: <http://www.cnn.com/2016/06/09/health/fda-imodium-opioid-warning/index.html>. August 2, 2016.
3. Marraffa JM, Howland MA, Sullivan RW, Morgan BW, Oakes JA, Wiegand, et. al. Cardiac conduction disturbance after loperamide abuse. *Clin Toxicol*. 2014. 52: 952-957.
4. Professional Resource, Loperamide Misuse and Abuse. *Pharmacist’s Letter/Prescriber’s Letter*. July 2016
5. U.S. Food and Drug Administration. “Loperamide (Imodium): Drug Safety Communication – Serious Heart Problems With High Doses From Abuse and Misuse. Retrieved from: <http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm505303.htm>. July 28, 2016.
6. Wightman RS, Hoffman RS, Howland MA, Rice B, Biary R, Lugassy D. Not your regular high: cardiac dysrhythmias caused by loperamide. *Clin Toxicol*. 2016; 54(5): 454-458.