

One Part of the Solution to Help Address Prescription Opioid Abuse *A Pharmaceutical Company's Perspective*

Presentation to:
New Mexico Economic and Rural Development Committee
November 9, 2016

Rupa Shah, PharmD
Purdue Pharma L.P.
Medical Affairs
Associate Director, Medical Science Liaison



In response to an unsolicited request

Agenda

- This presentation will provide information about:
 - Economic Impact of Opioid Abuse
 - Opioids with Abuse-Deterrent Properties
 - Case Study of OxyContin® (oxycodone HCl) Extended-Release Tablets

2

Economic Impact of Opioid Abuse

3

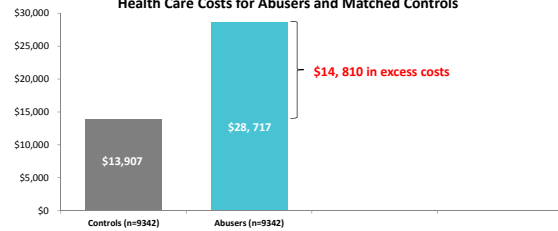
Costs of Prescription Opioid Abuse & Addiction in US

- Estimate of societal costs
- Cost grouped by health care, workplace, and criminal justice
- Total societal costs were estimated at \$55.7 billion dollars (2009)
 - Workplace cost - \$25.6 billion
 - Healthcare cost - \$25 billion
 - Criminal justice cost – \$5.1 billion

Birnbaum HG, White AG, Schiller M, et al. Societal costs of prescription opioid abuse, dependence, and misuse in the United States. *Pain Med*. 2011 Apr;12(4):637-47. Epub 2011 Mar 10.

Economic Burden of Opioid Abuse & Its Drivers Evidence from a Payer Perspective

Health Care Costs for Abusers and Matched Controls



Abusers = diagnosis of abuse, poisoning, overdose, dependence; Matched Controls = no abuse diagnosis

Howard J, et al. Diagnosis-level drivers and trajectory of excess costs prior to and after diagnosis of opioid abuse. Presented at AMOP Meeting, National Harbor, MD, October 3-6, 2016.

Addressing Opioid Abuse

Efforts to Address Issues Relating to Opioid Abuse

- White House Office of National Drug Control Policy – “Epidemic: Responding to America’s Prescription Drug Abuse Crisis” (2011)
 - Education
 - Risk Evaluation and Mitigation Strategy (REMS) for ER/LA Opioid Analgesics
 - CDC Guideline For Prescribing Opioids for Chronic Pain
 - Monitoring
 - Prescription Drug Monitoring Programs (PDMPs)
 - Disposal
 - Safe storage and disposal
 - Enforcement
 - Pill-mill legislation and law enforcement crackdowns in states (e.g., FL)
 - FDA Guidance on Evaluation and Labeling of Abuse-Deterrent Opioids

http://www.whitehouse.gov/sites/default/files/ondp/issucontent/prescription-drug/ra_abuse_plan.pdf

7

Opioids with Abuse-Deterrent Properties

8

FDA Guidance for Industry

Abuse Deterrent Opioids

- FDA considers the development of these products as high public health priority
- Issued 04/01/2015 (replaced *draft* Guidance from 01/2013)
- Explains FDA’s current thinking about studies that should be conducted to demonstrate that a formulation has abuse-deterrent properties
- To date, seven extended-release opioid products have received FDA-approved claims
 - Four are commercially available



Guidance for Industry: Abuse Deterrent Opioids – Evaluation and Labeling Issued by Food and Drug Administration
Guidance issued April 2015 at www.fda.gov/oc/ohrt/ohrt-guidance-for-industry-abuse-deterrent-opioids-evaluation-and-labeling

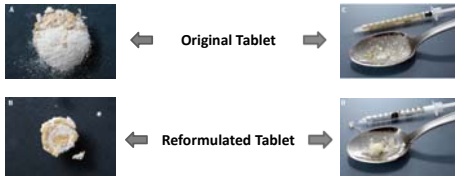
9

OxyContin Case Study - Select Epidemiology Data

10

Purdue's RESISTEC™ Technology

- Purdue Pharma's proprietary extended-release solid oral dosage formulation platform
- RESISTEC™ uses a unique combination of polymer and processing that
 - Confers tablet hardness
 - Imparts viscosity when dissolved in aqueous solutions



Data on File

11

OxyContin – In Vitro and Clinical Abuse Potential Findings

Section 9.2 Abuse - Summary in the Full Prescribing Information

- The *in vitro* data demonstrate that OxyContin has physicochemical properties that are expected to **make abuse via injection difficult**.
- The data from the clinical abuse potential study, along with support from the *in vitro* data, also indicate that OxyContin has physicochemical properties that are expected to **reduce abuse via the intranasal route**.
- However, abuse of OxyContin by these routes, as well as the oral route, is still possible**
- Additional data, including epidemiological data, when available, may provide further information on the impact of OxyContin on the abuse liability of the drug.

OxyContin Full Prescribing Information

12

The Results of the Epidemiology Studies That Follow May Not Be Solely Attributable to Reformulation of OxyContin

- Other factors that may have influenced the reductions seen for OxyContin and the comparators
 - Increased law enforcement activities
 - Decreased prescribing
 - Vigilance of prescribers
 - Prescription monitoring programs (PMPs)
 - REMS
- Also, these epidemiology studies have limitations in their evaluation on the impact of formulations with abuse-deterrent properties on the risk of overdose and death.
- FDA recognizes the complexity of the epidemiology studies and we are continuing to work with them to progress our epidemiologic study program and ongoing analyses for evaluation of the real-world impact of the reformulation.
- FDA has indicated in the media that they disagree with the conclusions of the authors of these studies in terms of how best to interpret these data.
- This area of research continues to progress rapidly with continued guidance from FDA.

13

Studies Published Independent of Purdue

- Jones CM. Trends in the nonmedical use of OxyContin, United States, 2006- 2013. *Clin J Pain*. 2016 [Publish Ahead of Print]. DOI:10.1097/AJP.0000000000000426
- Cicero TJ, Ellis MS. Abuse-deterrent formulations and the prescription opioid abuse epidemic in the United States: lessons learned from OxyContin. *JAMA Psychiatry*. 2015;72(5):424-30.
- LaRochelle MR, Zhang F, Ross-Degnan D, Wharam JF. Rates of opioid dispensing and overdose after introduction of abuse-deterrent extended-release oxycodone and withdrawal of propoxyphene. *JAMA Intern. Med*. 2015;175(6):978-987.
- Dart RC, et al. Trends in opioid analgesic abuse and mortality in the United States. *NEJM*. 2015;372(3):241-8.
- Degenhardt L, Larance B, Bruno R, Lintzeris N, Ali R, Farrell M. The introduction of a potentially abuse deterrent oxycodone formulation: early findings from the Australian National Opioid Medications Abuse Deterrence (NOMAD) study. *Drug Alc Depend*. 2015;151:56-67.
- Cicero TJ, Ellis MS, Surratt HL. Effect of abuse-deterrent formulation of OxyContin. *NEJM*. 2012;367(2):187-189.

14

Observational Study of Deaths

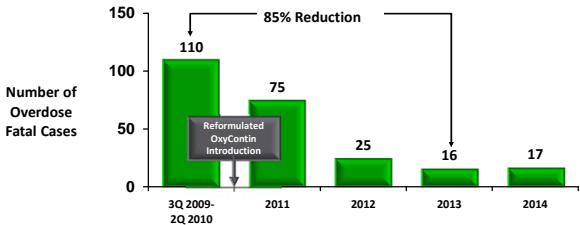
Purdue's Pharmacovigilance Department Reports (ARGUS)

Objective	▪ To evaluate the impact of introduction of reformulated OxyContin on reports of deaths received by Purdue
Population	▪ Spontaneous adverse event reports from the US
Design	▪ Observational study with two comparator groups of adverse event reports
Data source	▪ Purdue's pharmacovigilance database
Outcomes	Adverse events spontaneously reported to Purdue with date of death using three categories: <ul style="list-style-type: none"> ▪ All fatal reports ▪ Overdose fatal reports ▪ Non-fatal reports
Limitations	<ul style="list-style-type: none"> ▪ Information spontaneously and voluntarily reported to Purdue ▪ Not always possible to determine causality with spontaneous reporting ▪ Reflect an unknown and potentially variable fraction of fatalities occurring in the US population

Sessler NE, Downing RA, Kish H, et al. Reductions in reported deaths following the introduction of extended-release oxycodone (OxyContin) with abuse-deterrent formulation. *Pharmacovigilance and Patient Safety*. 2015;4(1):10-16. PMID: 26015808

15

Spontaneously Reported Overdose Fatal Cases by Date



Published data through 2013

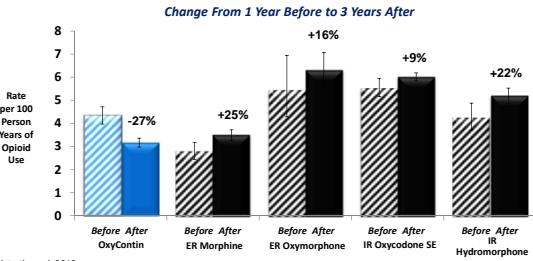
Seiler NE, Downing RA, Kohn H, et al. Reductions in reported deaths following the introduction of extended-release oxycodone (OxyContin) with abuse-deterrent formulation. *Pharmacovigilance*. 2014;10(1):1-10. doi:10.1007/s12267-014-9288-8

Retrospective Patient Cohort in Claims Database (MarketScan)

Objective	Assess change in rates of diagnosed events from one year before to three years after reformulation
Population	Individuals receiving an opioid prescription
Design	Retrospective cohort study Person-time of opioid use calculated from prescriptions Diagnostic code per 100 patient-years of use Analysis focused on time when only one opioid used
Data source	MarketScan commercial insurance database Approximately 100 million commercially insured US individuals
Outcomes	ICD-9-CM codes Overdose/Poisoning = 965.00, 965.02, 965.09 Opioid Use Disorder = 304.0x, 304.7x (dependence/addiction); 305.5x (abuse)
Limitations	Results from commercial insurance plan population may not be generalizable to Medicaid/uninsured populations Opioid exposure assessed from pharmacy dispensing database

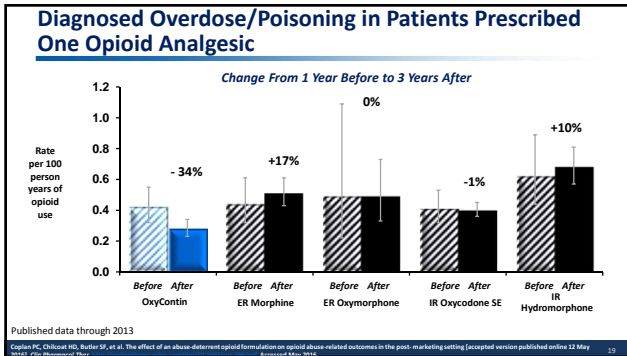
Karlson A, et al. Decrease in diagnosed abuse, addiction, and opioid poisoning among patients prescribed opioids after introduction of OxyContin with abuse-deterrent characteristics. Presented at: ISAP, Boston, MA, August 22-26, 2015.

Diagnosed Opioid Use Disorder in Patients Prescribed One Opioid Analgesic



Published data through 2013

Coplan PC, Chilcoat HD, Butler SF, et al. The effect of an abuse-deterrent opioid formulation on opioid abuse-related outcomes in the post-marketing setting [Accepted version published online 12 May 2016]. *J Pain Pharmacol Ther*. 2016;10(1):1-10. doi:10.1007/s12267-016-9288-8



QUESTIONS?
