

RADARS[®] SYSTEM



Researched Abuse, Diversion and Addiction-Related Surveillance System



2nd Quarter 2015 Technical Report

Reduced Street Price and Quantity Discounts for Diverted Extended Release OxyContin ER and Opana ER Following Crush Resistant Reformulation

Key Points:

1. The nonmedical use and abuse of prescription opioids is a growing public health burden.
2. This report uses street price data collected through the RADARS[®] System StreetRx.com website for extended release oxycodone (OxyContin ER) and extended release oxymorphone (Opana ER) following crush resistant reformulation.
3. The street prices of crush resistant formulations of OxyContin ER and Opana ER are significantly lower than their crushable equivalents across multiple tablet strengths.
4. The observation that price per mg decreased as tablet strength increased may represent a quantity discount phenomenon, by which buyers receive a lower price per mg for larger purchases as sellers minimize distribution risks.

Background

The nonmedical use and abuse of prescription opioids is a growing public health burden. In 2013, prescription opioids were involved in over 70% of deaths related to pharmaceutical overdose (1), and now represent the leading cause of injury death in the United States (2). Further, the current trend of increasing mortality has been mirrored by increases in emergency department visits (3), substance abuse treatment admissions (4), and quantity of opioids prescribed (5). Drug diversion, the unlawful channeling of drug from legal sources to the black market, has facilitated and amplified the availability of prescription opioids for misuse and abuse (6).

Crush resistant opioid formulations represent one strategy to reduce morbidity and mortality associated with diverted opioid medications. Historically, chronic opioid abusers manipulate or tamper with tablets to achieve increased euphoric effects (7). By crushing, dissolving, or chewing the tablets, abusers can bypass the controlled-release mechanism of extended release formulations. In August 2010, a crush resistant formulation of oxycodone (OxyContin[®] ER) was introduced to the market, and in February 2012, a crush resistant formulation of oxymorphone (Opana[®] ER) also became available. Although recent findings suggest a change in abuse patterns following reformulation (8), data regarding their impact on the diverted market remains limited.

Using street price as a metric to evaluate the impact of crush resistant reformulation, we sought to report street prices for diverted oxycodone and oxymorphone following crush resistant reformulation.

Methods

Program

Street price data were collected using the RADARS[®] System StreetRx (StreetRx.com), a crowdsourcing website which gathers, organizes, and displays street price data on illicit and diverted pharmaceutical substances. Site users anonymously submitted prices they paid or heard were paid for diverted prescription opioids, specifying the drug formulation, dose, and location between January 2012 and December 2014. Methodologies to reduce noise and identify less credible submissions were previously described (9). Oxycodone and oxymorphone submissions were grouped into

two formulation categories: crushable and crush resistant. For each formulation category, three tablet strength categories were used: ≤ 15 mg, 20 to 40 mg, and ≥ 60 mg.

Statistical Analysis

The price per milligram was calculated by dividing the price paid for the tablet by the milligrams of opioid within the tablet. Because price data were positively skewed, analyses were conducted on the natural log scale. The natural log of the price per milligram was regressed on a categorical variable for formulation and strength. A formulation by strength interaction was included. Only milligram strengths of tablets dispensed in the United States were included in the analysis.

Results

- A total of 8048 oxycodone and 342 oxymorphone street price reports were obtained
- The geometric mean price for crush resistant and crushable oxycodone varied from \$0.38/mg to \$1.12/mg and from \$0.38/mg to \$1.26/mg, respectively (Figure 1)
- The geometric mean price for crush resistant and crushable oxymorphone varied from \$0.67 to \$1.81/mg and from \$1.15/mg to \$2.29/mg, respectively (Figure 2)
- For tablet strengths less than 60mg, the geometric mean price for crush resistant oxycodone was less than the crushable equivalent ($p \leq 0.05$)
- For tablet strengths 20mg and above, the geometric mean price for crush resistant oxymorphone was less than the crushable equivalent ($p \leq 0.05$)
- For both oxycodone and oxymorphone, the geometric mean price per milligram decreased, by a magnitude of 47-70%, as tablet strength increased

Figure 1

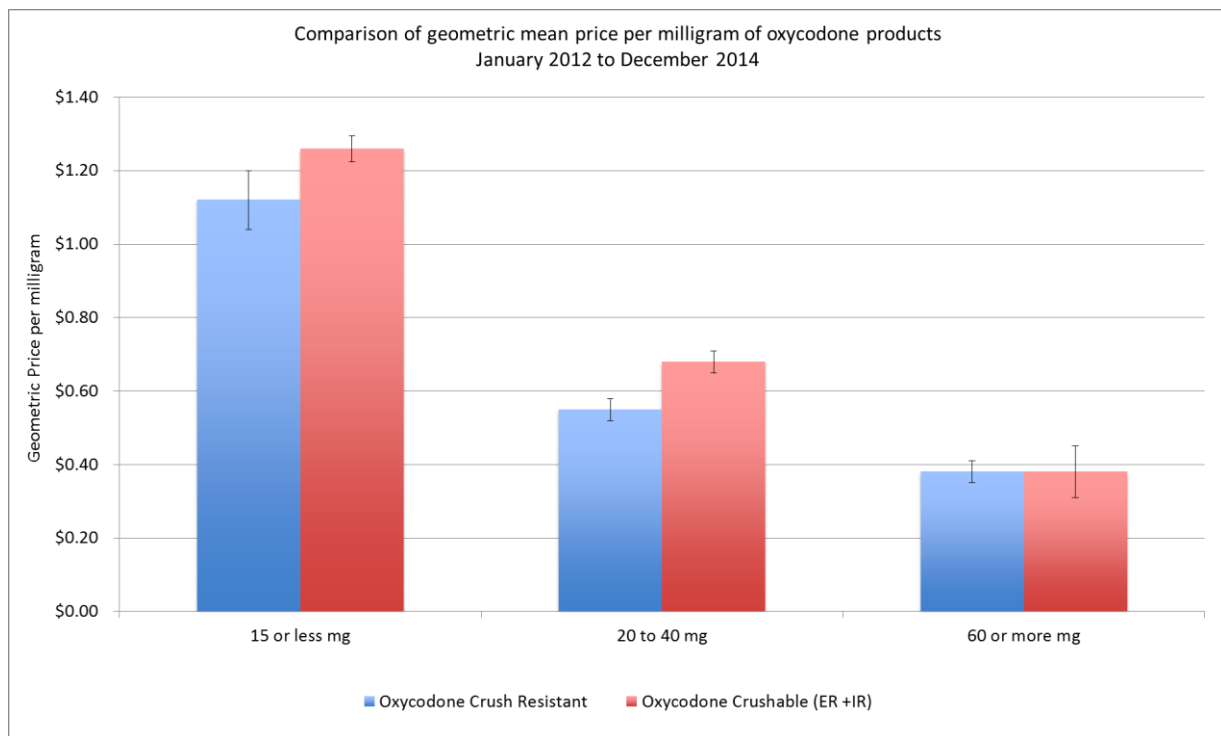
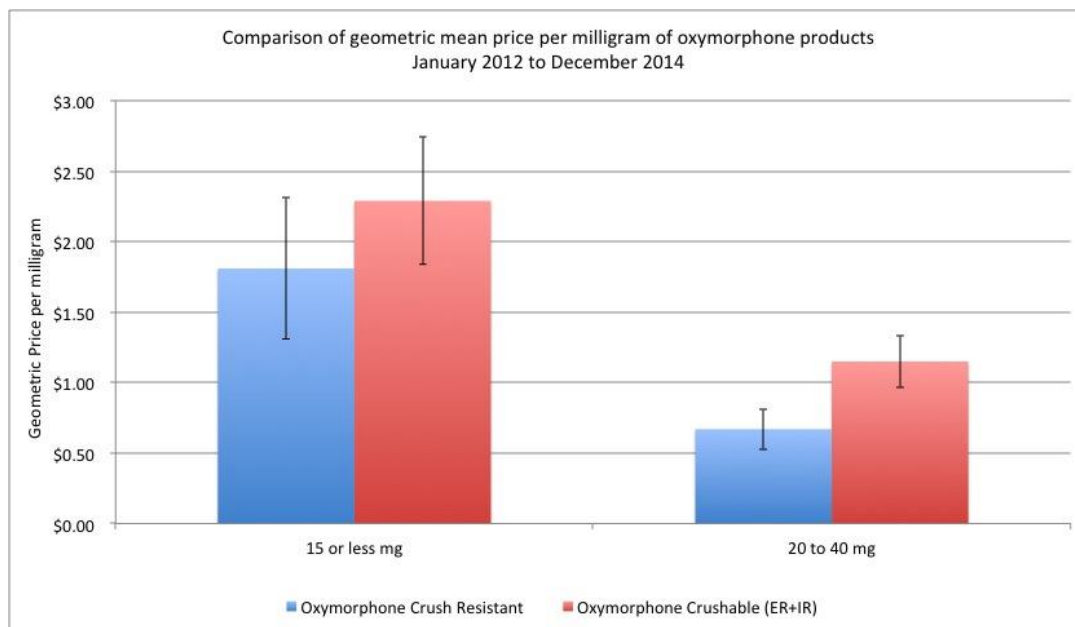


Figure 2



Conclusions

The street prices of crush resistant OxyContin ER and Opana ER are significantly lower than their crushable equivalents across multiple tablet strengths. These data suggest that buyers of diverted prescription opioids find crush resistant formulations less desirable and support their role in curbing opioid abuse. The observation that price per milligram decreased as tablet strength increased may represent a quantity discount phenomenon, by which buyers receive a lower price per milligram for larger purchases as sellers minimize distribution risks. These data are the first to report quantity discounts for diverted prescription opioids, which furthers our understanding of the complexities of the diverted opioid market.

Suggested Citation

Lebin JA, Murphy DL, Severtson SG, Dasgupta N, Dart RC (2015). Reduced Street Price and Quantity Discounts for Diverted Extended Release OxyContin ER and Opana ER Following Crush Resistant Reformulation. RADARS[®] System Technical Report, 2015-Q2.

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