

Abuse Deterrent Reformulation of Controlled Release Oxycodone is Associated with Persistently Declining Rates of Abuse and Diversion By Both Oral and Non-oral Routes

Iwanicki JL, Severtson SG, Green JL, Besharat AC, Dart RC

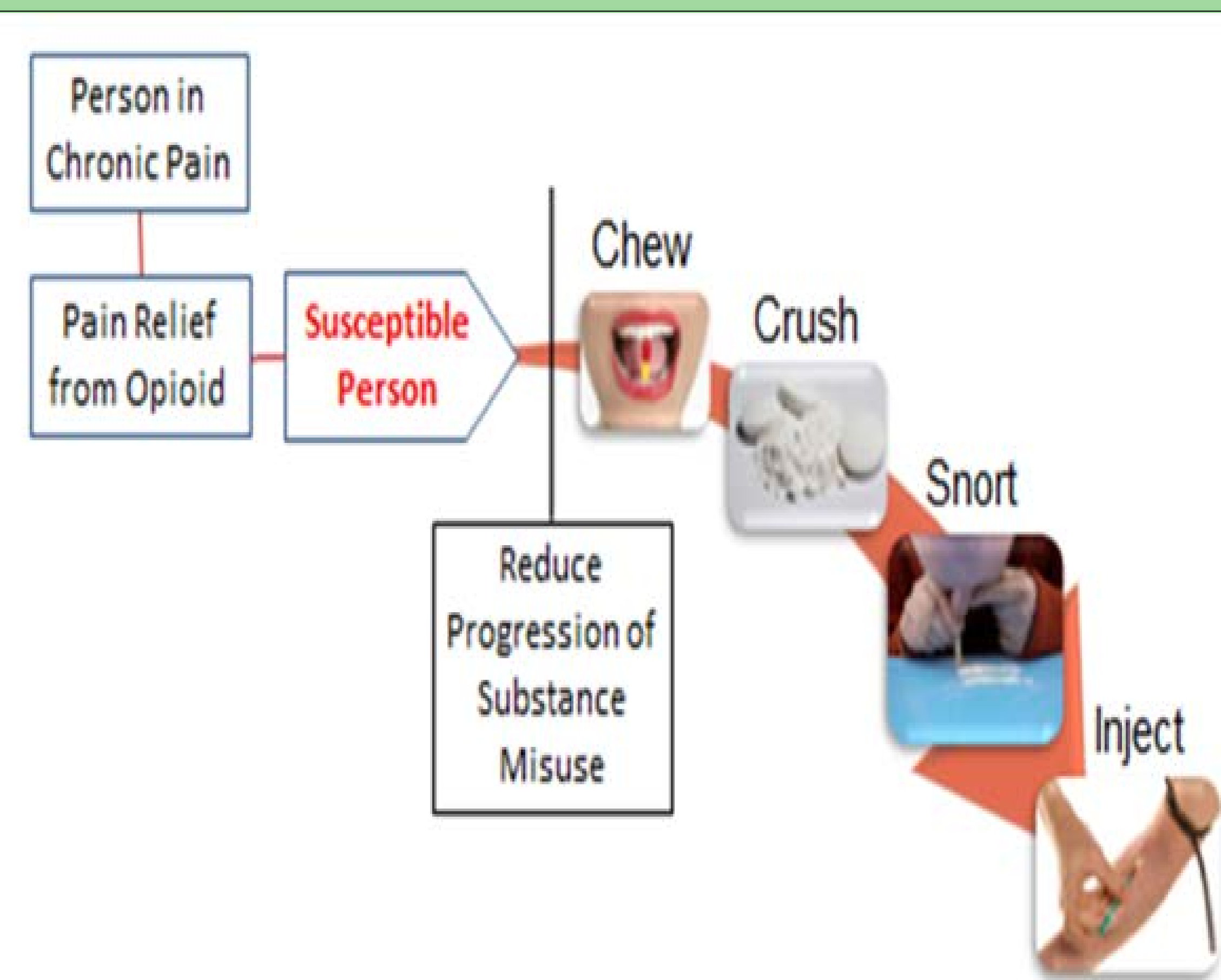
Introduction

- Increasing prescription opioid use in the United States has increased the availability of these medications and population of patients exposed to opioids, even when initially prescribed for appropriate medical indications.
- A significant proportion of the intended patient population who are appropriately treated with opioids has a combination of predisposing factors for addiction. Once these patients with risk factors are exposed, some are likely to progress to abuse and addiction.
- Patients may progress from swallowing, to chewing, crushing, snorting, and eventually injecting to relieve pain more quickly (Figure 1).
- Enhanced psychotropic effects, along with pain control, may increase risk of addiction and the likelihood of further progression down this pathway.
- Abuse deterrent formulations (ADFs) may prevent initiation and progression to addiction. A commonly abused formulation of oxycodone controlled release (OxyContin) was reformulated to be resistant to crushing and solubilization.
- The aim of this study was to compare the rates of OxyContin® abuse and diversion before and after the ADF reformulation after its introduction in August 2010.

Methods

- Data from four Researched Abuse, Diversion, and Addiction-Related Surveillance (RADARS®) System Programs were used.
- The average quarterly rates of diversion and abuse for OxyContin were compared one year prior to reformulation to rates in the 4th quarter of 2014.
- The change in rates were compared to the change in rates for other opioid tablets and capsules during the same time frame.
- Other opioids included immediate release (IR) oxycodone, IR and extended release (ER) hydrocodone, IR and ER morphine, IR and ER hydromorphone, IR oxymorphone, IR and ER tramadol, and IR and ER tapentadol.
- Rates were adjusted for population and drug utilization through retail channels using the number of prescriptions dispensed.

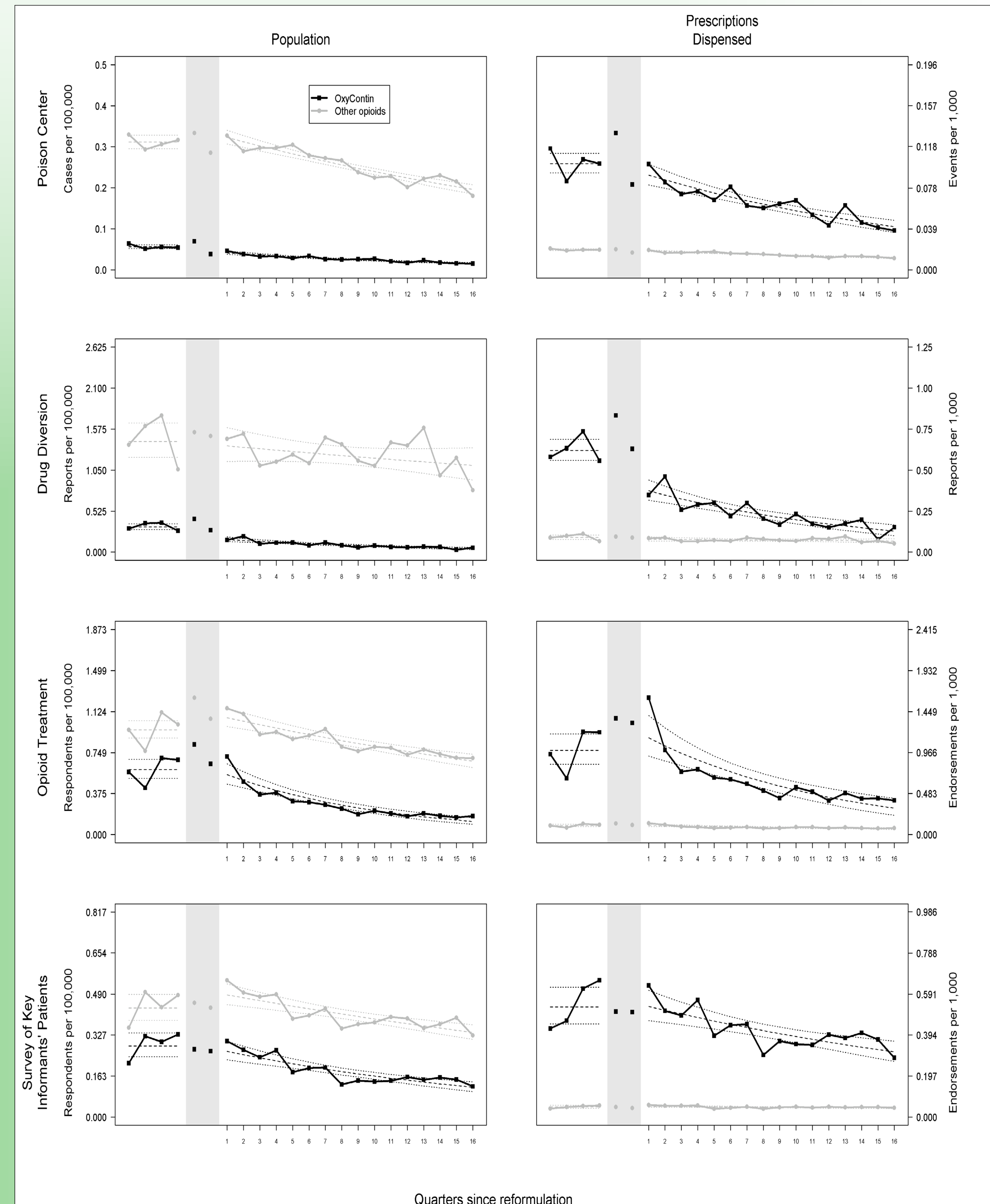
Figure 1. Potential Benefit of Abuse Deterrent Formulations



Results

- Rates of OxyContin abuse and diversion after adjustment for prescriptions dispensed significantly declined every quarter following the introduction of the ADF (Figure 2). These declines were greater than changes observed for other opioids.
- In the Poison Center Program, the rate of OxyContin abuse declined by 72.6%, while other opioids declined by 37.1% (Figure 2).
- In the Drug Diversion Program, the rate of diversion for OxyContin declined by 85.7%, while other opioids declined by only 21.6% (Figure 2).
- In Opioid Treatment Programs, the rate of OxyContin abuse declined by 79.7%, while the rate for other opioids declined by 30.0% (Figure 2).
- In the Survey of Key Informants' Patients Program, the rate for OxyContin abuse declined by 58.1% while the rate for other opioids declined by 22.3% (Figure 2).
- Abuse through both oral and non-oral routes of self-administration declined.
- The geometric mean street price of the new formulation was 23% less than the original formulation.

Figure 2. Diversion and Abuse of Oxycodone in the United States Before and After Reformulation



Conclusions

- Reformulation of OxyContin was associated with declining rates of abuse and diversion that were greater than those observed for other opioids. The decreased rates have persisted for 4 years.
- ADFs have potential to reduce the number of people who progress from oral overuse to other unintended routes of abuse such as snorting and injecting (Figure 1).