Abuse-Deterrent Formulations: Anticipated and Unanticipated Outcomes

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Conflicts of Interest

- Scientific Advisory Board for RADARS® (Researched Abuse, Diversion and Addiction-Related Surveillance) System, funded through an unrestricted research grant sponsored by Denver Health and Hospital Authority (DHHA), which collects subscription fees from 14 pharmaceutical firms.

- No other conflicts of interest.
Methodology

- **Survey of Key Informants’ Patients (SKIP) Program**
  - Patients entering 1 of 150 substance abuse treatment centers across the country.
  - 600-800 opioid abusers complete an anonymous survey per quarter.

- **Researchers and Participants Interacting Directly (RAPID)**
  - Follow-up cohort of SKIP participants.
  - Over 600 registered participants complete quarterly questionnaires.
Abuse-Deterrent OxyContin
Effect on abuse

OxyContin Abuse

Percent of SKIP Population

-16.2%
p < 0.001

Year-Quarter

09q1 09q2 09q3 09q4 10q1 10q2 10q3 10q4 11q1 11q2 11q3 11q4 12q1 12q2 12q3 12q4 13q1 13q2 13q3 13q4 14q1 14q2 14q3 14q4 15q1 15q2 15q3 15q4
How did the ADF impact OxyContin abusers?

![Bar chart showing the impact of the ADF on OxyContin abusers. The chart compares the percentage of total respondents who used OxyContin in non-oral and oral forms before and after the reformulation.]

- **Any Non-Oral:**
  - OxyContin Original: 91.5%
  - OxyContin Reformulation: 47.9%

- **Any Oral:**
  - OxyContin Original: 53.8%
  - OxyContin Reformulation: 80.3%
Shifts to other drugs
Drugs selected to “replace” OxyContin

[Graph showing the percentage of RAPID respondents selecting different drugs to replace OxyContin, with Heroin at 70%, followed by Other Oxycodeone and Hydromorphone Hydrochloride at lower percentages.]
Increases in Heroin Abuse

- Are ADFs solely responsible for the increase in the use of heroin?
  - Of course not.

- Many factors drive the use of heroin.
  - Price.
  - Availability.
  - The “high.”
  - Lessening of social stigma.
Increases in Heroin Abuse

![Graph showing increases in heroin abuse]

- **Prescription Opioids Only**
- **Heroin + Prescription Opioids**
- **Heroin Only**
Immediate-release formulations
Non-Oral vs. Oral Abuse

![Bar chart showing the percent of total respondents for any oral ROA and any non-oral ROA, comparing any immediate release opioid and any extended release opioid.]
Formulation Preference

- Immediate Release Opioids: 66.1%
- Extended Release Opioids: 4.0%
- I have no preference: 29.9%
IR Preference

- 73%, immediacy of the high and strength of the initial “rush.”
- 31%, IR opioids were easier to abuse through non-oral routes of administration.
- Several mentions of difficulty with ADFs.
- Only 2% attributed preference to access and availability.
IR Preference

“If I'm going to take a drug I like to feel high and the effects right away. I don't want to wait half an hour until the high hits me because you never know how long or when exactly it will hit and I end up taking to many, wanting a faster effect. If I'm gonna do a drug I want to get high right there and then.”
IR Preference

“To get a good feeling from extended release opioids, one must apply a good deal of chemistry and/or preparation. It takes some filing, some powdering, and some use of an acidic liquid, like coca-cola in order to break down the extended release properties.”
Conclusions

- ADFs have the potential to reduce abuse, primarily through non-oral routes of administration.
- ADFs can result in some shifts to other drugs of abuse.
- ADFs should be considered for immediate-release as well as extended-release opioids.