A Cost-Benefit Assessment of Abuse Deterrent Opioids

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The Findings in Brief

Opioids are an important treatment option for pain and chronic pain patients

In conflict

Abuse and diversion of opioids imposes health care & societal costs

Are ADO’s a Cost Effective Means to Lessen the Conflict?

• Initial studies are finding that abuse-deterrent opioids (ADO) reduce the problem of opioid abuse

• This study compared the estimated dollar benefit from reduced opioid abuse to an estimate of the higher costs of ADO medications

• Based on these estimates, there is a net economic benefit from prescribing ADO’s ranging from $1,757 per patient to $4,033 per patient
The Costs of Pain

- Some level of chronic pain afflicts over 100 million Americans

- Opioids are an important therapy that helps those suffering the most from chronic pain, and patients with short-term needs (e.g. post surgery)

- The economic costs from chronic pain include higher healthcare costs and lower productivity at work

The estimated aggregate cost of chronic pain is $635 billion, with $335 billion attributed to lost productivity and $300 billion to additional healthcare costs. The costs range from $261 billion to $560 billion.
The Costs of Opioid Abuse

- More than 16,000 people die every year from overdoses involving pain medication (CDC)

- 1 in 20 people in the U.S. age 12 and older reported using prescription pain medicines for nonmedical reasons

- Opioid analgesics were involved in
  - 30% of drug overdose deaths in 1999
  - 60% in 2010
  - Opioid-related overdose deaths now outnumber overdose deaths involving all illicit drugs combined.*

The Potential Role of Abuse-Deterrent Opioids

Success Requires Combination of Tools...
- Physician/patient education
- Prescription monitoring
- Serially numbered prescriptions
- Physician–patient contracts
- Photo ID requirements
- Urine drug toxicology screening
- Safe disposal provisions for unused opioids
- Clinical questionnaires

...Including Abuse-Deterrent Opioids
- **Fortress Approach**: Maintain extended-release characteristics despite crushing or dissolving
- **Neutralizing Approach**: Tampering with the formulation releases a neutralizing antagonist
- **Aversive Approach**: Results in un-pleasant side effects when a large quantity is ingested
Preliminary Findings on the Effectiveness of Abuse-Deterrent Opioids: Excess Healthcare Costs

- Excess annual per-patient medical costs associated with diagnosed opioid abuse were $9,456 for commercially-insured patients and $11,501 for Medicaid-insured patients.

- “The introduction of reformulated ER oxycodone was associated with relative reductions in rates of diagnosed opioid abuse of 22.7% and 18.0% among commercially-insured and Medicaid patients, respectively.”

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Preliminary Findings on the Effectiveness of Abuse-Deterrent Opioids: Total Costs

• In addition to medical costs, opioid abuse also imposes:
  • Workplace costs
  • Criminal justice costs

• Accounting for all 3 categories of costs, Kirson et al. (2014) found $1.04 billion in cost reductions due to reformulated ER oxycodone (ADO)

Total Annual Benefits per Patient from Abuse-deterrent Opioids

- The potential benefits of abuse-deterrent opioids (column 4) is estimated as the reduced costs from lower the number of opioid abusers (measured on a per patient) basis (column 2).
- To obtain these benefits, the abuse-deterrent opioid needs to be provided to the entire population. Therefore the potential cost savings between $9,456 and $11,501 (column 2) needs to be weighted by the reduction in the rate of diagnosed opioid abuse (column 3).

<table>
<thead>
<tr>
<th></th>
<th>(2) Additional Per-patient Annual Cost Premium of Abusers</th>
<th>(3) Percentage Reduction</th>
<th>(4) Benefit per Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health expenses commercially-insured</td>
<td>$9,456</td>
<td>22.7%</td>
<td>$2,146.51</td>
</tr>
<tr>
<td>Health expenses Medicaid/Uninsured</td>
<td>$11,501</td>
<td>18.0%</td>
<td>$2,070.18</td>
</tr>
<tr>
<td>Non-health related expenses</td>
<td>$12,414</td>
<td>20.1%</td>
<td>$2,498.26</td>
</tr>
<tr>
<td><strong>Total commercially-insured population</strong></td>
<td></td>
<td></td>
<td><strong>$4,644.77</strong></td>
</tr>
<tr>
<td><strong>Total Medicaid/uninsured population</strong></td>
<td></td>
<td></td>
<td><strong>$4,568.44</strong></td>
</tr>
</tbody>
</table>

Author calculations based on:
Estimating the Current Higher Costs for ADO Drugs

• Due to ADO’s being patented, generally, gaining the $4,568 to $4,645 in benefits per opioid patient, requires additional market expenditures

• ADO cost premium based on current opioid prices*
  • Lower-end estimate = the average cost of patented opioids \textit{minus} average cost of generic opioids
  • Higher-end estimate = the most expensive patented opioid price \textit{minus} the lowest priced generic price

• Prices need to be annualized to match annual benefit

Estimating the Current Higher Costs for ADO Drugs

- Calculations based on slightly more than 4 opioid prescriptions per patient prescribed annually

<table>
<thead>
<tr>
<th>Average Price</th>
<th></th>
<th>Annualized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patented</td>
<td>$373</td>
<td>$612.02</td>
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<tr>
<td>Generic</td>
<td>$233</td>
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<tr>
<td>Price Gap</td>
<td>$144</td>
<td>$612.02</td>
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<td></td>
</tr>
<tr>
<td>Price Gap</td>
<td>$644</td>
<td>$2,811.26</td>
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</tbody>
</table>

Total Annual Net Benefits per Patient from Abuse-deterrent Opioids

- The net benefit is simply the additional benefits *minus* the estimated additional costs

<table>
<thead>
<tr>
<th>Average Price</th>
<th>Net Benefit per Opioid Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Benefit Commercially-insured Population</td>
<td>$4,032.75</td>
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<tr>
<td>Net Benefit Medicaid/uninsured Population</td>
<td>$3,956.42</td>
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</table>

<table>
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<tr>
<th>Largest Gap</th>
<th>Net Benefit per Opioid Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Benefit Commercially-insured Population</td>
<td>$1,833.51</td>
</tr>
<tr>
<td>Net Benefit Medicaid/uninsured Population</td>
<td>$1,757.18</td>
</tr>
</tbody>
</table>
Takeaways

• Promising technology: Based on research of ADOs’ effectiveness, and current price gaps, the overall societal benefit from prescribing ADOs exceeds the additional outlays required

• For state budget, savings in criminal justice and corrections offset higher medical expenditures

• State formulary policies influence other market formulary policies

• Caveats:
  • More research is needed to confirm ADOs impact
  • ADO technology requires other abuse-deterrent tools
  • External benefits: while payers cover the costs, they do not gain all of the benefits (e.g. lower criminal justice costs)