There is increasing interest in opioid overdose, with recent studies describing an increased risk of overdose at higher opioid doses. Most cases were identified through a hospitalization claim or treatment in an ER setting (89.1%). The principal reason for the medical visit was summarized by the primary diagnosis for hospitalized cases or the setting in which the overdose case was identified. The study design issues, potential confounding, and relative contribution of other risk factors such as demographic and socioeconomic factors are important considerations. For example, patients with substance use disorders are at higher risk of overdose. Administrative claims databases are a rich resource of medical/prescription data, and the clinical characteristics of overdose cases can be explored using these databases. The authors have replicated this research in a large administrative claims database (MarketScan), identifying cases of opioid overdose using ICD-9 codes (965.00, 965.02, 965.09). Overdose cases appeared to be complex – co-occurring sedative/hypnotic/tranquilizer poisoning and opioid poisoning. To better understand the potential severity of the overdose events, the authors explored the clinical characteristics of overdose cases, including the presence of concomitant psychiatric or prescription drug diagnoses.

**OBJECTIVE**

To further understand the potential severity of the overdose events by exploring the clinical characteristics of overdose cases. The study design issues, potential confounding, and relative contribution of other risk factors such as demographic and socioeconomic factors are important considerations.

**METHODS**

- Study design: retrospective cohort study
- Dataset: MarketScan Commercial Database
- Population: 1 year of age with a new opioid prescription
- Methods: using prescription data from MarketScan Commercial database
- Parameters: the primary diagnosis for hospitalized cases or the setting in which the overdose case was identified
- Observation time: the period of observation was from the first occurrence of an overdose event to 365 days after the event

**RESULTS**

- Among all hospitalization cases identified as opioid overdose (n=1,574), 85% of cases were identified using ICD-9-CM codes 965.00 (morphine-based), 965.02 (methadone), 965.09 (other opiates/related narcotics).
- The proportion of cases with concomitant psychiatric or prescription drug diagnoses (primary or secondary) was also explored (see Table 1).

**CONCLUSIONS**

- The study finds that concomitant psychiatric or prescription drug diagnoses are common among opioid overdose cases.
- The results have implications for treatment and prevention strategies.
- Further research is needed to explore the factors contributing to these findings and to develop effective interventions.

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**Table 1. Diagnoses Used to Identify PrimaryFirst Diagnoses for Overdose Cases**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid overdose/poisoning</td>
<td>90.0%</td>
</tr>
<tr>
<td>Sedative/hypnotic poisoning</td>
<td>9.6%</td>
</tr>
<tr>
<td>Other diagnosis</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

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**Table 2. Diagnostic Codes Used to Identify Concomitant Psychiatric or Prescription Diagnoses**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid use disorders</td>
<td>53.1%</td>
</tr>
<tr>
<td>Psychiatric disorders</td>
<td>25.1%</td>
</tr>
<tr>
<td>Prescription drug disorders</td>
<td>21.8%</td>
</tr>
</tbody>
</table>

---

**Table 3. Specific Psychiatric and Prescription Diagnoses in Commercial Cases by Treatment Setting**

<table>
<thead>
<tr>
<th>Setting</th>
<th>Psychiatric</th>
<th>Prescription</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>60.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>ER</td>
<td>10.0%</td>
<td>50.0%</td>
</tr>
</tbody>
</table>

---

**Figure 1. Treatment Setting of Overdose Cases**

- Hospitalized cases: n=1,574
- ER cases: n=556

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**Figure 2. Proportion of Cases with No Prescribed Opioids in Varying Time Windows Preceding the Overdose**

- 30 days: 20.0% |
- 90 days: 5.0% |

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**Figure 3. Primary Diagnoses**

- Among All Hospitalized Overdose Cases (n=1,574)
- Among ER Overdose Cases (n=556)

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**Figure 4. Concomitant Psychiatric and Prescription Diagnoses among the 3,224 Overdose Cases**

- Among secondary diagnoses: n=9616, 232 cases of overdose were identified (0.02 cases/100 person-years), 29.4% of cases had no prescribed opioids during the study period.