ED Use for Behavioral Health among Rural Residents

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• Established in 1980, at The University of North Dakota (UND) School of Medicine and Health Sciences in Grand Forks, ND
• One of the country’s most experienced state rural health offices
• UND Center of Excellence in Research, Scholarship, and Creative Activity
• Home to seven national programs
• Recipient of the UND Award for Departmental Excellence in Research

Focus on
- Educating and Informing
- Policy
- Research and Evaluation
- Working with Communities
- American Indians
- Health Workforce
- Hospitals and Facilities

ruralhealth.und.edu
Background

- 43.4 million adults in the U.S. had any mental illness in 2015 \cite{1}
- 15.1 million were diagnosed with alcohol abuse \cite{2}
- In 2007, 12.5% of all ED visits were related to mental health or substance abuse (MH/SA) \cite{3}
- Metro, non-metro comparisons only \cite{3}
- MH/SA patients who present at the ED have increased ED boarding times, require resource-intensive care, impact the quality of care for other ED patients, are at an increased risk of readmission, and are more likely to be uninsured \cite{3}

Methods

- AHRQ’s Healthcare Cost and Utilization Project
- State Inpatient Database (SID) and State Emergency Department Database (SEDD) for calendar year 2013
- States included: Arizona, Iowa, Kentucky, New Jersey, North Carolina, Vermont, and Wisconsin
- Patient ZIP codes were linked to the Rural-Urban Commuting Areas (RUCAs)
Table 1. Geographic Distribution of Sample

<table>
<thead>
<tr>
<th></th>
<th>Isolated Rural</th>
<th>Small Rural</th>
<th>Large Rural</th>
<th>Urban</th>
<th>Total 2013 Est. Pop.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Arizona</td>
<td>33,368</td>
<td>1%</td>
<td>127,413</td>
<td>2%</td>
<td>357,066</td>
</tr>
<tr>
<td>Iowa</td>
<td>289,489</td>
<td>9%</td>
<td>381,223</td>
<td>12%</td>
<td>406,431</td>
</tr>
<tr>
<td>Kentucky</td>
<td>292,968</td>
<td>7%</td>
<td>459,015</td>
<td>10%</td>
<td>756,705</td>
</tr>
<tr>
<td>North Carolina</td>
<td>211,566</td>
<td>2%</td>
<td>312,321</td>
<td>3%</td>
<td>774,558</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2,383</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>677</td>
</tr>
<tr>
<td>Vermont</td>
<td>162,102</td>
<td>26%</td>
<td>104,356</td>
<td>14%</td>
<td>118,833</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>346,177</td>
<td>6%</td>
<td>361,487</td>
<td>6%</td>
<td>454,211</td>
</tr>
</tbody>
</table>

Methods

- Alzheimer’s Disease and Dementia were excluded
- Anovas for all Demographics (p < 0.05)
- Two by two comparisons (CIs)
- Difference of means (age)
Results

- N = 1,352,156 (number of all ED visits in 2013 for seven selected states)
- 14.6% of ED visits had a primary MH/SA diagnosis
- 61% of all MH/SA ED visits were female
- 49.4% of all MH/SA ED visits were age 18-44
  - 32.4% age 45-64
  - 18.2% age 65+
- Primary Payers: Medicare (28.6%), Uninsured (25.2%), Private (24.3%)
- MH only are primarily on Medicare
- SA only are primarily uninsured

Figure 1. ED Patient Demographics for all Visits, 2013
Results

• Among Urban residents presenting to EDs, 70.7% of all MH/SA visits carried a primary mental health diagnosis compared to 75.5%, 75.8%, and 75.7% of Large Rural, Small Rural, and Isolated Small Rural residents.
• Urban residents presenting to the ED with a MH/SA diagnosis were more likely than rural residents to report a primary diagnosis of SA.
Rural MH/SA ED Patients

- More likely than Urban to present with MH than SA
- More likely to be age 65+
- More likely to be on Medicare
- More likely to be on Medicaid
- Less likely to be uninsured

Figure 3. Percent of MH/SA ED Patients Age 65+ by Geography

<table>
<thead>
<tr>
<th>Geography</th>
<th>All MH/SA</th>
<th>Mental Health</th>
<th>Substance Abuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>18.2%</td>
<td>4.9%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Large Rural</td>
<td>22.3%</td>
<td>6.8%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Small Rural</td>
<td>26.4%</td>
<td>7.0%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Isolated Small Rural</td>
<td>27.9%</td>
<td>8.3%</td>
<td>8.3%</td>
</tr>
</tbody>
</table>
Figure 4. Percent of all MH/SA ED Patients by Payer & Geography, 2013

Figure 5. Percent of ED Patients with MH Only by Payer & Geographic Category, 2013

Figure 6. Percent of ED Patients with SA Only by Payer & Geographic Category, 2013
Table 2. Patient Demographics for those Presenting to ED with Primary MH/SA Diagnoses

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>1,352,156</td>
<td>855,566</td>
<td>275,461</td>
<td>126,011</td>
<td>74,495</td>
<td>56,489</td>
<td>44,528</td>
</tr>
<tr>
<td>% of all ED Visits</td>
<td>15.1%</td>
<td>70.7%</td>
<td>20.4%</td>
<td>12.0%</td>
<td>17.7%</td>
<td>11.0%</td>
<td>7.7%</td>
</tr>
<tr>
<td>% of all ED MH/SA Visits</td>
<td>62.9%</td>
<td>84.9%</td>
<td>10.1%</td>
<td>61.5%</td>
<td>85.7%</td>
<td>95.158</td>
<td>62.1%</td>
</tr>
<tr>
<td>Female</td>
<td>61.0%</td>
<td>82.6%</td>
<td>10.8%</td>
<td>62.9%</td>
<td>84.9%</td>
<td>61.5%</td>
<td>85.7%</td>
</tr>
<tr>
<td>Age, in years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-44</td>
<td>49.4%</td>
<td>45.8%</td>
<td>57.4%</td>
<td>46.2%</td>
<td>57.1%</td>
<td>43.0%</td>
<td>55.9%</td>
</tr>
<tr>
<td>45-64</td>
<td>32.4%</td>
<td>30.4%</td>
<td>37.7%</td>
<td>31.5%</td>
<td>36.1%</td>
<td>30.6%</td>
<td>37.1%</td>
</tr>
<tr>
<td>65+</td>
<td>18.2%</td>
<td>23.8%</td>
<td>04.9%</td>
<td>22.3%</td>
<td>27.5%</td>
<td>26.4%</td>
<td>07.0%</td>
</tr>
<tr>
<td>Primary Payer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicare</td>
<td>28.6%</td>
<td>34.9%</td>
<td>11.5%</td>
<td>36.3%</td>
<td>42.0%</td>
<td>39.5%</td>
<td>45.7%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>19.4%</td>
<td>19.5%</td>
<td>17.5%</td>
<td>22.1%</td>
<td>21.5%</td>
<td>22.8%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Private</td>
<td>24.3%</td>
<td>25.8%</td>
<td>20.6%</td>
<td>18.1%</td>
<td>18.5%</td>
<td>17.4%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Uninsured</td>
<td>25.2%</td>
<td>17.2%</td>
<td>47.8%</td>
<td>21.0%</td>
<td>15.8%</td>
<td>17.7%</td>
<td>13.2%</td>
</tr>
<tr>
<td>Other</td>
<td>02.5%</td>
<td>02.5%</td>
<td>02.5%</td>
<td>02.5%</td>
<td>02.5%</td>
<td>02.6%</td>
<td>02.0%</td>
</tr>
</tbody>
</table>

Conclusions & Implications

- The percent of MH/SA ED visits has been increasing in rural and urban communities alike
- EDs treating rural residents were more likely to see MH/SA cases age 65 and older, primarily presenting with MH, and more likely to be publically insured (to include Medicaid and Medicare)
Future Topics

• Dual-eligibles
• Cost of providing MH care in an ED compared to primary mental health clinic, especially in rural communities
• Current data, shift in prevalence as a result of opioid use?
• Average readmissions for MH ED patients, by geography
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