The economic burden of pathological gambling & co-occurring mental health and substance use disorders

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APHA Atlanta, GA. November 6, 2017
Authors declare that they have no competing interests.
Outline

- Background
- Objectives
- Data and Methods
- Results
- Conclusions
Pathological gambling is characterized by persistent and recurrent maladaptive gambling that leads to personal and social harm.

Pathological gambling occurs in conjunction with substance use disorders, mood disorders and personality disorders.

Mental illnesses, especially anxiety disorders and depressive disorders, are costly to society.

No studies have estimated the economic burden of pathological gambling and co-occurring clinical disorders.
Objectives

- Assess the health care costs of pathological gambling (PG) and co-occurring mental health and substance use disorders
- Examine cost components by source of payment
Data

- Massachusetts (MA) All-Payer Claims Database (APCD) for the period 2009-2013
  - Representative health claims database
- Medical and pharmaceutical claims
- All health care settings and levels of care
  - Physician/outpatient visits, inpatient and emergency department visits
Study Analytical Sample

- **Inclusion criteria**
  - Commercially insured adult residents in Massachusetts who had a clinical diagnosis of pathological gambling (ICD-9-CM 31231) and sought care in the Commonwealth

- **Exclusions: n = patients**
  - Patients under 18 yrs.: n = 13
  - Patients (n= 8) providers (n= 2) zip code outside MA
  - Patients who did not have health insurance n= 270
  - Patients with public insurance only: n= 62
  - Patients whose first claim was in 2013: n=27
Methods

- Health care cost components
  - Physician/outpatient visits, hospital admissions, emergency department visits & prescription drugs
- Payments to providers inclusive of coinsurance, deductibles and co-payments
- Bootstrap analysis (i.e., 5,000 bootstrap resamples) to estimate the 95% confidence interval (95% CI)
- All costs adjusted to 2012 constant dollars
- Analyses performed with STATA MP 14
- UMass Institution Review Board granted study approval
Most Prevalent Principal Diagnosis, 2009-2012

As a % of Patients with PG in Any Position  N = 599

Pathological Gambling: 50%
Episodic Mood Disorders: 31%
Anxiety Disorders: 14%
Psychoactive Substances: 9%
Depressive Disorders: 5%
Adjustment Reaction: 4%

Psychoactive substances: Alcohol dependence syndrome (ICD9-code 303), drug dependence (ICD9-code 304) and non-dependent abuse of drugs (ICD9-code 305.0). Prevalence rates <3% were suppressed.
Most Prevalent Primary Diagnosis, 2009-2012

As a % of Patients with Dx1  N = 454

Psychoactive substances: Alcohol dependence syndrome (ICD9-code 303), drug dependence (ICD9-code 304) and non-dependent abuse of drugs (ICD9-code 305.0). Prevalence rates <3% were suppressed.
## Medical, Pharmaceutical & Total Health Care Expenditures

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample Size</th>
<th>Mean (95% CI Bias-corrected)</th>
<th>Std Error Bootstrapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 (n=269)</td>
<td></td>
<td>$ 5,497.1 ($8,375.7)</td>
<td>$ 733.8</td>
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<tr>
<td></td>
<td></td>
<td>$ 1,684.7 ($2,441.0)</td>
<td>$ 188.5</td>
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<td>$ 7,992.8 ($11,847.3)</td>
<td>$ 970.5</td>
</tr>
<tr>
<td>2010 (n=411)</td>
<td></td>
<td>$ 7,319.6 ($10,949.8)</td>
<td>$ 916.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$ 1,679.5 ($2,317.2)</td>
<td>$ 164.71</td>
</tr>
<tr>
<td></td>
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<td>$ 10,054.2 ($14,555.1)</td>
<td>$ 1,152.40</td>
</tr>
<tr>
<td>2011 (n=386)</td>
<td></td>
<td>$ 6,536.6 ($9,929.3)</td>
<td>$ 863.37</td>
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<tr>
<td></td>
<td></td>
<td>$ 1,601.5 ($3,012.8)</td>
<td>$ 357.72</td>
</tr>
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<td></td>
<td></td>
<td>$ 9,093.4 ($13,421.9)</td>
<td>$ 1,089.35</td>
</tr>
<tr>
<td>2012 (n=357)</td>
<td></td>
<td>$ 7,702.5 ($13,322.6)</td>
<td>$ 1,411.93</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$ 1,546.7 ($2,598.2)</td>
<td>$ 265.53</td>
</tr>
<tr>
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<td></td>
<td>$ 9,523.2 ($14,504.7)</td>
<td>$ 1,271.10</td>
</tr>
</tbody>
</table>

Does not include patients without continuous health insurance (n= 270)
Median Medical, Pharmaceutical & Total Health Care Expenditures

Per patient

2009
5,246
Medical Expdt. 2,958
Rx Expdt. 874

2010
5,331
Total Health Care Expdt. 3,023
Medical Expdt. 819
Rx Expdt. 679

2011
5,660
Total Health Care Expdt. 3,225

2012
5,869
Total Health Care Expdt. 3,777

Values are CPI adjusted 2012.
Pharmaceutical Expenditures

- Mean annual pharmaceutical expenditures per patient per year were $1,685±$2,441 in 2009, $1,679±$2,317 in 2010, $1,601±$3,013 in 2011 and $1,547±$2,598 in 2012

- Prescription drug insurance plans accounted for the largest percentage of prescription drug expenditures

- Prescription drug co-payments represented the largest component of the patient’s out-of-pocket expenditures on pharmaceuticals
Limitations

- Data through June 30, 2013
  - Right censored data

- Pathological gamblers seeking care in MA
  - Underestimation of PG prevalence

- Commercially insured population

- Retrospective claims-based
  - Possible coding errors
  - Missing data for non-reimbursable variables
Conclusions

- The mean annual total expenditures on health care per patient ranged from $7,993 in 2009 to $14,505 in 2012
- Rx expenditures represented 20% of total health care expenditures
- Pathological gambling and co-occurring psychiatric and substance use disorders pose a significant economic burden to patients and health care payers
Acknowledgements

- Massachusetts Center for Health Information and Analysis (CHIA)
- Funding provided by the Massachusetts Gaming Commission in Boston, MA
- The findings, interpretations and conclusions expressed in this presentation are entirely those of the authors and do not represent the views of the Massachusetts Gaming Commission.
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