

# Measuring the Burden of Excessive Alcohol Consumption among Michigan Residents: Alcohol-Attributable Hospitalizations, 2001-2010

Katy Gonzales, MPH, Thomas Largo, MPH

Michigan Department of Community Health, Bureau of Disease Control, Prevention, and Epidemiology

## Background

- Excessive alcohol consumption is associated with multiple adverse health and social consequences, including liver cirrhosis, certain cancers, unintentional injuries, violence, and fetal alcohol spectrum disorder<sup>1</sup>.
- In 2006, 4.4 million U.S. outpatient visits were attributable to excessive drinking and alcohol-attributable hospitalizations cost \$5.1 million dollars<sup>1</sup>.
- This is the first comprehensive analysis and summary of hospitalizations for a wide variety of conditions attributable to alcohol among Michigan residents.

## Methods

Data were obtained from the Michigan Inpatient Database.

A case was defined as:

- Michigan resident
- Admitted to one of Michigan's 142 acute care hospitals
- Discharged between 1/1/2001-12/31/2010
- Primary diagnosis = alcohol-attributable condition<sup>2,3,4</sup> (Table 1)
- Prevalence of alcohol-attributable hospitalizations by patient demographics, source of admission, discharge disposition, insurance type and total hospital charges were generated.
- Characteristics of alcohol-attributable hospitalizations were compared to all other hospitalizations using Pearson's chi-square tests. Differences were statistically significant when  $p \leq 0.05$ .

**Table 1. Alcohol-attributable conditions and corresponding ICD-9-CM codes**

Alcohol-Attributable Condition	ICD-9-CM Code
Alcohol psychoses	291.0-291.5, 291.81, 291.89, 291.9
Acute alcohol intoxication	303.00-303.03, 303.90-303.93
Alcohol abuse	305.00-305.03
Alcoholic polyneuropathy	357.5
Alcoholic cardiomyopathy	425.5
Alcoholic gastritis	535.30, 535.31
Alcoholic liver diseases	571.0-571.3
Fetal alcohol syndrome	760.71
Excessive blood level of alcohol	790.3
Toxic effect of ethyl alcohol	980
Accidental poisoning by alcoholic beverages	E860.0, E860.1

## Results

Figure 1. Alcohol-attributable (A-A) and non alcohol-attributable (Non A-A) hospitalization rates among Michigan residents, by age and sex, 2001-2010

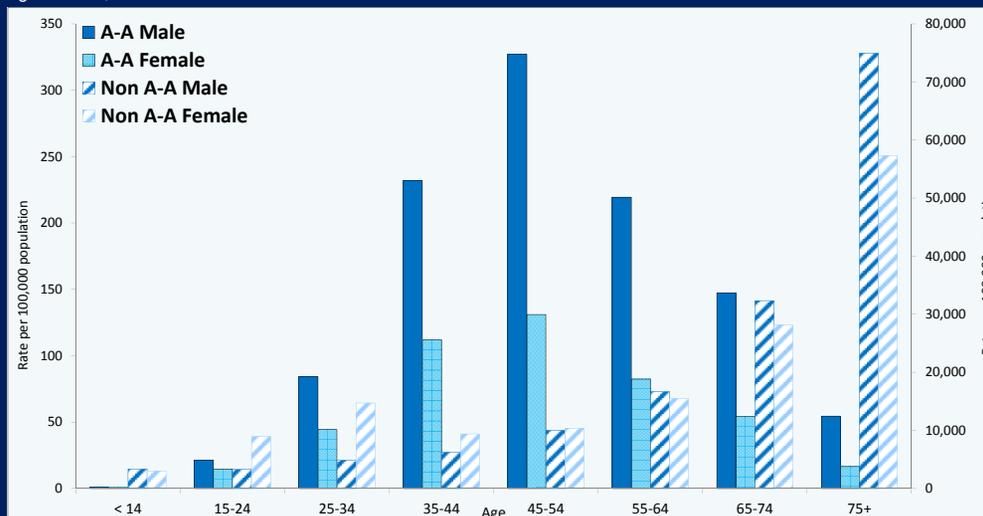
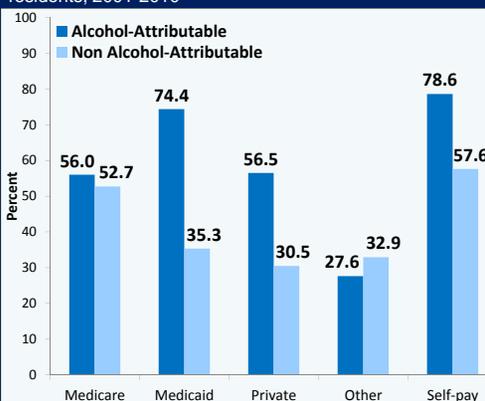
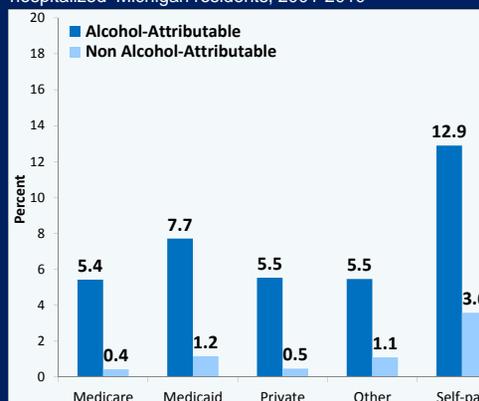


Figure 2. Proportion of admissions via emergency department, by payer source, among hospitalized Michigan residents, 2001-2010



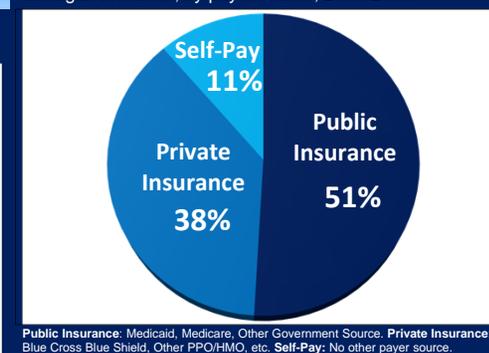
- Among alcohol-attributable hospitalizations:
  - Men and middle aged adults had the highest rates, compared to non alcohol-attributable hospitalizations which were highest among older adults (Figure 1)
  - Annual hospital charges equaled \$115 million
    - Half were paid by public insurance (\$59 million)
    - \$13 million were among those who self-paid (Figure 4)

Figure 3. Proportion of discharge disposition: discontinued care/left against medical advice, by payer source, among hospitalized Michigan residents, 2001-2010



- Compared to those hospitalized for other reasons, individuals hospitalized with an alcohol-attributable condition were more likely to:
  - Be seen in the emergency department prior to hospitalization (Figure 2)
  - Discontinue their care or leave against medical advice, regardless of payer source (Figure 3)

Figure 4. Alcohol-attributable hospitalizations among Michigan residents, by payer source, 2001-2010



Public Insurance: Medicaid, Medicare, Other Government Source. Private Insurance: Blue Cross Blue Shield, Other PPO/HMO, etc. Self-Pay: No other payer source.

## Conclusions

For alcohol-attributable hospitalizations:

- The high proportion of admission via emergency department may be an indication that these patients lack primary and/or managed care. Previous research has concluded that these conditions are often more progressed and more expensive to treat.
  - Individuals are more likely to leave without a discharge plan, suggesting limited follow-up opportunities and resources for medical interventions and treatment.
  - Self-payment implies a lack of health insurance coverage and these individuals represent an at-risk population that is less likely to have access to and afford healthcare resources and more likely to delay seeking treatment.
- Limitations**
- The true burden of alcohol on Michigan's health care system is not captured because alcohol-attributable emergency department data are currently not available; this analysis was limited to primary diagnoses and treatment data were excluded.
  - These data may understate the incidence of alcohol-attributable hospitalizations due to the perceived stigma related to these diagnoses and incomplete identification of these conditions.

### Recommendations

- Extend screening and behavioral counseling interventions beyond primary care settings to all hospitalized individuals.
- Implement Community Guide recommendations which may reduce excessive alcohol consumption and related harms, including hospitalizations<sup>5</sup>.

## References

- Moulety et al. Economic Costs of Excessive Alcohol Consumption in the U.S., 2006. Am J Prev Med 2011;41(5):516-524
- National Institute on Drug Abuse. The Economic Costs of Alcohol and Drug Abuse in the United States - 1992. Appendix A: Health Disorder Codes
- Centers for Disease Control and Prevention. Alcohol-Related Disease Impact (ARDI) Software. Chen CM, et al. (2009). Trends in Alcohol-Related Mortality Among Short Stay Community Hospital Discharges, United States, 1979 - 2006. Surveillance Report #84. National Institute on Alcohol Abuse and Alcoholism, Arlington, VA.
- The Guide to Community Preventive Services. <http://www.thecommunityguide.org/alcohol/index.html>

