



PREVENTION OPPORTUNITIES UNDER THE BIG SKY

Update: Unintentional, Non-Fire-Related Carbon Monoxide Poisoning in Montana, 2010 – 2013

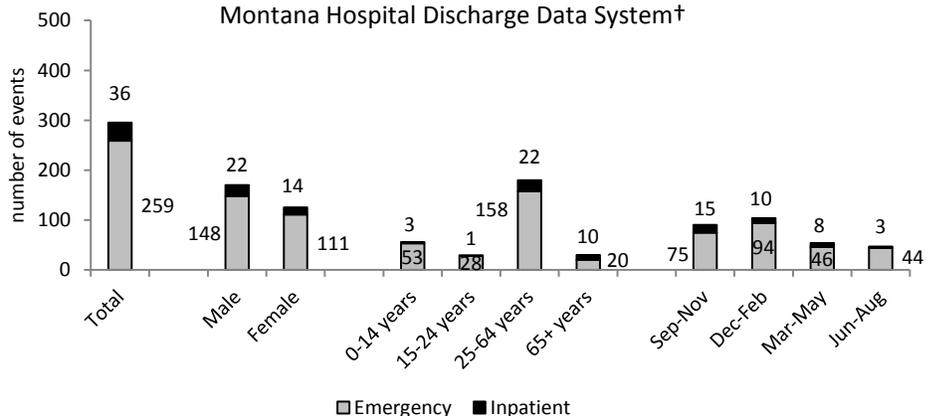
The national average for unintentional, non-fire-related (UNFR) deaths attributed to carbon monoxide (CO) poisoning between 1999 and 2004 was 1.53 deaths per million population, with a range among states from 0.35 to 6.19 per million.¹ Montana, along with Alaska, Nebraska, North Dakota, and Wyoming had mortality rates substantially higher than the national average (4.16, 4.88, 4.32, 3.20, and 6.19, respectively) for the same time interval. These states share risk factors such as harsh winters, rural or frontier status, the use of generators and combustion heat sources, either routinely or during periods of power outages, and prolonged warming of vehicles in garages or near building air intakes. This report reviews carbon monoxide poisoning in Montana for the past five years, 2010 - 2013.

During 2010 through 2013, there were eight deaths attributed directly to UNFR CO poisoning in Montana, and 27 additional deaths in which CO poisoning was mentioned as a contributing cause, for an average of 9 deaths per year in our population of just over a million.² In addition, there were 36 inpatient admissions and 259 ED visits for UNFR CO poisoning, an average of 9 admissions and 65 ED visits per year.³ In 2007, the national averages were 5 admissions (95% Confidence Interval 4-7) and 56 ED visits (95% CI 54-57) per million population.⁴

There was a substantial excess of adults age 25 to 64 years (61% of cases) among individuals who presented for medical treatment in Montana (Figure). Two thirds of the events occurred between September and February, consistent with many published reports.

The External Cause of Injury Codes in the admission and ED data sets, and the text descriptions in the death certificates, are not complete or detailed enough to permit us to determine location (home, work, recreational setting), sources of exposure

Inpatient Admissions and Emergency Department Visits for Carbon Monoxide Poisoning, 2010-2013
Montana Hospital Discharge Data System†



† Data provided through a Memorandum of Agreement with the Montana Hospital Association

(regular heating or cooking systems, alternate heating or cooking methods, vehicle exhaust), or other circumstances of exposures for most events. However, previous studies have found that between two thirds and three quarters of UNFR CO poisoning events occur at home and in the winter months, and are attributed to faulty regular heating systems, generators and other alternative combustion heating or cooking methods, and vehicle exhaust.^{4,5} The contribution of alternative heating or cooking methods is particularly high during storms and other disasters when normal methods are unavailable.^{6,7}

Recommendations

All these CO poisoning events were potentially preventable. Two public health approaches can reduce UNFR CO poisoning.

- The first is education about the importance of regular maintenance of all combustion heating and cooking appliances in the home, the safe use of alternate heating and cooking methods during power failures, and the dangers of vehicle exhaust in enclosed spaces.
- The second approach is to increase the presence of working CO alarms in dwellings. The 2009 American Housing Survey found that only 36% of homes had working CO alarms and the 2009 National Health Interview Survey found only 40%.⁸ Policies should require CO alarms along with smoke alarms for all public buildings and rental properties. Insurance carriers should be encouraged to offer incentives for home owners to install CO alarms.

References:

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3. The Montana Hospital Discharge Data System (MHDDS) receives annual de-identified hospital discharge and emergency department data sets through a Memorandum of Agreement with the Montana Hospital Association. Most hospitals in Montana participate in voluntary reporting from their Uniform Billing forms, version 2004. The MHDDS receives information on more than 90% of inpatient admissions and 85% of ED visits in Montana.
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