

**AN EPIDEMIOLOGY PUBLICATION OF THE OREGON DEPARTMENT OF HUMAN SERVICES**

**TRAUMATIC BRAIN INJURY (TBI) IN OREGON**

*“TBI is like an incomplete death: you’ve lost a person, or parts of that person, but he’s still there. ...Is Alan still Alan? Yes and no.”<sup>1</sup>*

**A** TRAUMATIC brain injury (TBI) occurs every 15 seconds in the United States.<sup>2</sup> Annually, TBI results in one million emergency department visits,<sup>3</sup> 373,000 hospitalizations,<sup>4</sup> and over 50,000 deaths.<sup>5,6</sup> Although many TBI survivors appear healthy externally, survivors often experience cognitive, emotional, and learning disorders that interfere with the activities of daily living. Of those who survive, yearly almost 99,000 develop some level of irreversible loss of brain functioning.<sup>3</sup> Each year in the U.S. TBI costs at least \$48 billion—\$32 billion are spent on hospital care for survivors and \$16 billion on acute care and years of productive life lost due to fatal brain injury.<sup>6</sup>

**THE INCIDENCE OF TBI IN OREGON**

How many persons suffer TBIs in Oregon each year? We do not currently have the means to measure this accurately. This is primarily because we do not have a way to count patients seen in emergency departments and doctors’ offices who are not hospitalized, and who didn’t die from their TBI. These may account for as many as 90% of TBI cases. Although

these patients may not require acute hospitalization, they often have severe sequelae that contribute substantially to the overall burden of TBI in Oregon. We do have information, however, on severe TBIs that usually result in hospitalization or death.

**HOSPITALIZATIONS FOR TBI**

In 2001 there were 2,850 TBI-related hospital discharges in Oregon. These admissions accounted for 16,973 inpatient days; the mean hospital stay was six days. Treatment costs were reported as almost \$74 million.

The overall rate of TBI hospitalization for the state was 82 per 100,000; however, rate for males was nearly twice that of females, 109 vs. 56, respectively (see figure, below left). Male victims were also younger than their female counterparts. The mean age for males was 40, compared with 48 for females. The highest rates were found among 15–24 year-olds and those aged 75 and older (see figure, right).

The intent and cause of injury were documented in 88% of the cases. The majority (80%) of the injuries were unintentional, while 6% were assaults with homicidal intent and 1% were suicide attempts. The leading causes of injury were motor vehicle traffic crashes (33%), falls (32%), and being struck by or against an object (8%).

Persons aged 15 to 24 years were more likely to be injured in a motor vehicle traffic crash (51% of TBIs in this age group), whereas the older age groups were more likely to be hurt in a fall (67% of TBIs in this age group).

Seven percent of the patients died in the hospital. Twenty-four percent were either discharged to another facility or to home health care services.

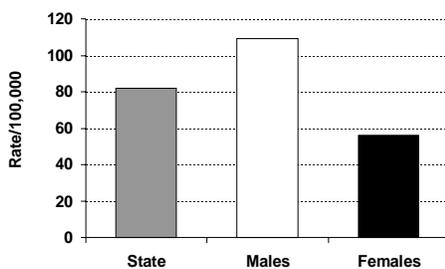
**DEATHS FROM TBI**

There were 723 TBI-related deaths among Oregon residents in 2001, including those who died in the hospital. The overall rate of TBI deaths for Oregon was 21 per 100,000 population, and the mean age at the time of death was 49 years. Seventy-five percent of the deaths occurred among males and 25% among females, and the mean age at death was essentially the same for both groups.

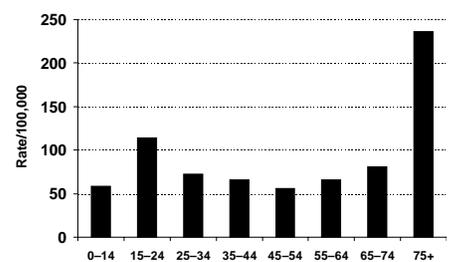
Forty-eight percent of TBI deaths were from unintentional injuries, 34% were the results of suicide and 6% were homicides. The leading causes of death were firearms (37%), motor vehicle traffic crashes (33%), and falls (15%). Eighty-nine percent of the firearm deaths were suicides and 9% were homicides.

Mortality rates were higher for the oldest age groups, with rates increasing dramatically after age 74. Rates for those 75 and older were 2.5 times as high as the rate for those for individuals aged 65 to 74 years. The leading causes of TBI deaths for those over age 75 were falls (42%), firearms (26%), and motor vehicle traffic crashes (11%).

**TBI hospitalizations by gender, Oregon 2001**



**TBI hospitalizations by age group, Oregon 2001**



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## CD SUMMARY

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Comparing fatal TBIs to non-fatal hospitalizations for TBI, it's clear that when a TBI involves a firearm it is almost invariably fatal. While firearm suicides do not account for a substantial proportion of TBI hospitalizations, they do make up more than one-third of TBI deaths.

### PREVENTING TBI

TBI is largely preventable. Prevention programs should be targeted to high-risk groups and behaviors. As with most public health problems, accurate surveillance is a useful tool for the targeting of prevention efforts. Healthcare providers can contribute to surveillance by including in the patient record documentation of the cause of an injury. This documentation leads to the assignment of codes that can be used for surveillance.

In addition to supporting surveillance activities, you can help reduce TBI morbidity and mortality by continuing to emphasize prevention with your patients by:

- Encouraging the use of seat belts and child safety seats;
- Providing warnings about the dangers of driving under the influence of alcohol and drugs;
- Promoting helmet use when biking, skiing, snowboarding, and riding a motorcycle;
- Educating elderly patients about how to prevent falls;

- Educating patients and others regarding the safe storage of firearms;
- Screening for suicidal ideation and other suicidal behaviors.

### RESOURCES

In 2001, Governor Kitzhaber established the Governor's Task Force on TBI. The Task Force has been studying the occurrence of TBI and the availability of services for TBI victims in Oregon. House Bill 2700, which grew out of the work of the Task Force, is currently being considered by the legislature. This bill would establish a state Commission on Brain Injury to address the needs of TBI victims, and also authorize the creation of a TBI Registry to provide more accurate data on TBI in Oregon.

More information about this bill or about the Task Force can be obtained from the Brain Injury Association of Oregon, Inc. (BIAOR), 2145 NW Overton Street, Portland, OR 97210, 503/413-7707 or 800/544-5243, [www.biaoregon.org](http://www.biaoregon.org).

The Centers for Disease Control and Prevention has just come out with a new information packet for physicians entitled "Heads Up: Brain Injury in Your Practice." You can find and order it on the web at: [http://www.cdc.gov/ncipc/pub-res/tbi\\_toolkit/toolkit.htm](http://www.cdc.gov/ncipc/pub-res/tbi_toolkit/toolkit.htm).

Additional information about TBI prevention is available from the National Center for Injury Prevention and Control's website at <http://www.cdc.gov/ncipc/factsheets/tbi-prevention.htm>, and from our Injury Prevention and Epidemiology Section, 503/731-4024.

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