

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

**STROKE MORTALITY IN OREGON: LEADING THE WAY (AND NOT HAPPY ABOUT IT)**

**S**TROKE CAUSES MORE than its quota of death and suffering in Oregon. During the year 2000, 2,567 or 13% of all deaths in the state were due to stroke. This gives Oregon a stroke death rate of 73.9 per 100,000, ranking us third highest in the nation; and, let's face it, this is a contest we'd rather not win. Further, while Oregon's death rate from stroke has been higher than the U.S. rate for over 30 years, the disparity has increased over the past decade (figures). In fact, from 1990 to 2000, the stroke death rate for Oregon increased 34%. The economic impact of stroke on Oregon is also substantial. Stroke-related hospitalizations alone cost Oregonians \$93 million in 2000.

**STRATEGIES TO LESSEN STROKE MORBIDITY AND MORTALITY**

Effective management of stroke, as with heart attack, requires prompt treatment. Evidence suggests that thrombolytic therapy, begun within three hours of symptom onset, can reverse ischemia, decrease the ultimate area of infarction, and lessen long-term morbidity and disability.<sup>1</sup> In this sense, stroke needs to be managed as a "brain attack" with the same urgency used in managing a heart attack. This potential benefit

must be weighed against the risk of conversion of ischemic stroke to intracerebral hemorrhage, an outcome increased in the setting of thrombolysis.<sup>1</sup>

**OScPREY**

Although we have good statistics of stroke deaths, we don't have a very good handle on how frequently stroke occurs in Oregon, nor, until recently, have we had a system in place for tracking treatment for stroke in Oregon hospitals. However, in 2002, a coalition of clinicians, hospitals, and public health staff under the leadership of the Center for Outcomes Research and Evaluation at Providence Health Systems established the Oregon Stroke Centers Prototype Registry or "OScPREy." The purpose of this project was to explore the feasibility of creating a population-based registry of stroke victims and to collect data on their acute treatment. The Registry was funded through the Centers for Disease Control and Prevention and collects data on all stroke cases seen at 16 participating hospitals around the state.

Since OScPREy got "pushed out of the nest" in mid-2002, it has collected data on over 1,600 persons with stroke. Analysis of the data suggests

that use of tissue plasminogen activator (tPA)—the only stroke treatment approved by the Food and Drug Administration—was higher than the national average. In Oregon, 4.5% of stroke patients received tPA, as compared with 3% nationally. Review of "code status" (the presence or absence of advanced directives, "do not resuscitate" orders, etc.) revealed that nearly 41% of all stroke patients in the registry had authorized care-limiting documents on file. This high rate of advanced directives (if likelihood of recovery was considered low and the advanced directive was honored) could have contributed to Oregon's high stroke death rate.

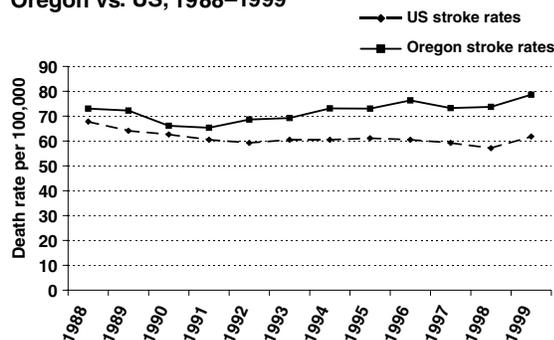
For a more complete description of the Registry, you can visit OScPREy's website at [www.oregonstrokeregistry.org](http://www.oregonstrokeregistry.org).

The data collection tools, including forms and data dictionary will soon be available on the web site as well.

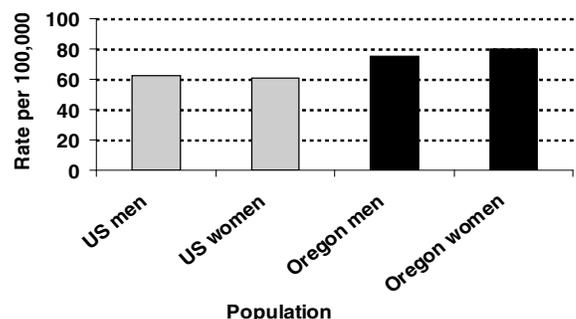
**STROKE AND PUBLIC HEALTH**

From a public health point of view, there are clearly huge benefits if we can prevent strokes from happening in the first place. Some risk factors for stroke, of course, we can't do a lot about. We don't have much say in our heredity, age, or sex. How-

**Stroke death rates (age-adjusted) Oregon vs. US, 1988–1999**



**1999 Stroke Death Rate Comparisons by Sex**





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ever, there are lifestyle changes—quitting smoking, regular exercise, and healthy diet, for instance—that we can strongly recommend to our patients. Such changes decrease the risk, not only of stroke, but of ischemic heart disease and diabetes, among other conditions.

There are also effective ways to prevent stroke in people with medical conditions that put them at higher risk. The U.S. Preventive Services Task Force (USPSTF) strongly recommends blood pressure screening for all adults  $\geq 18$  years of age.<sup>2</sup> Effective control of high blood pressure significantly reduces stroke risk.<sup>3</sup>

Similarly, the USPSTF recommends routine screening for hyperlipidemia<sup>2</sup> in men  $\geq 35$  years of age and women  $\geq 45$  years of age. Control of hyperlipidemia also markedly reduces risk of stroke.<sup>4</sup> (Alas, while we collect self-reported data on the prevalence of diagnosed hypertension and hyperlipidemia, we don't have good data, for Oregon or nationally, on the extent to which people have these conditions under control.)

Antiplatelet and/or anticoagulant therapy reduces the risk of stroke in patients with atrial fibrillation,<sup>5,6</sup> those with certain hypercoagulable states,<sup>7,8</sup> and those with history of prior stroke.<sup>9</sup>

Stroke morbidity and mortality can also be potentially decreased if we educate high-risk patients and their families about how a stroke might present. A patient who knows the

spectrum of possible stroke symptoms is far more likely to enter the emergency medical system within the first 3 hours of symptom onset. This gains precious time for evaluating the patient, assessing and reviewing risks and benefits from therapy, and, as indicated, initiating thrombolytic treatment.

Oregon Health Services recently received a grant from CDC to help develop a statewide plan to decrease death and disability caused by stroke and ischemic heart disease. Over the coming months, we will be working with community organizations, clinicians, hospitals, EMS personnel, stroke survivors, and others around the state to hone and then implement a heart disease and stroke prevention action plan. This plan will address what we in Oregon can do to optimize prevention in the clinical setting. It will also involve community-wide efforts to promote healthy, easily-accessible food choices and opportunities for physical activity. If interested, call 503/731-4273 or visit our web site (see below).

#### EVERYTHING YOU WANTED TO KNOW ABOUT CHRONIC DISEASE IN OREGON (AND NOW YOU DON'T EVEN HAVE TO ASK!)

Just a heads-up; we recently added *Keeping Oregonians Healthy* to the DHS website: <http://www.healthoregon.org/hpcdp>. This handy document provides incidence and mortality data about multiple chronic diseases and risk conditions. Information is presented for the state as a whole, and is also broken down by county.

This report also integrates information from multiple data sources to outline patterns of tobacco use, physical activity, and nutrition among all Oregonians, and provides information about health status among different racial/ethnic groups and other selected populations. Finally, it provides an insightful look at the ways in which community conditions can promote, or impede, good health.

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