

AN EPIDEMIOLOGY PUBLICATION OF THE OREGON DEPARTMENT OF HUMAN SERVICES

## LUNG CANCER IN OREGON

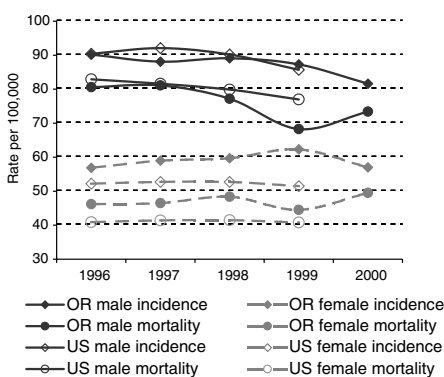
**L**UNG CANCER IS the third most common cancer diagnosed in Oregon, and it is the leading cause of cancer mortality. In 2000, 2,353 cases of invasive lung cancer were diagnosed and 2,078 Oregonians died from malignant lung cancers. Cancer is the second-highest cause of years of potential life lost (YPLL) prior to age 65; by this measurement, lung is the most costly of all cancers, with an average of 4,310 YPLL annually in the state. The mortality/incidence ratio for lung cancer is 0.84.

In this *CD Summary*, we describe the epidemiology of lung cancer in Oregon\* with national comparisons for 1996–2000, and report on the status of Oregon’s nationally-recognized Tobacco Prevention and Evaluation Program (TPEP).

### INCIDENCE

Every day, seven Oregonians are diagnosed with lung cancer. Although men have higher rates of lung cancer incidence, lung cancer incidence decreased 2% annually for Oregon men but increased 0.5% annually for Oregon women from 1996–2000; this sex difference follows national trends. Of the 38 states that have cancer registries meeting quality criteria standards, Oregon’s lung cancer incidence ranked 20th for men but eighth for women in 1999.

Lung cancer rates, 1996–2000



\* All rates are age-adjusted to the Year 2000 Standard and are per 100,000.

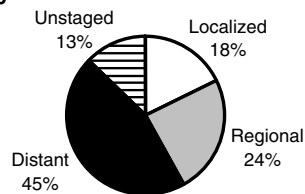
### MORTALITY

Six Oregonians die each day from lung cancer. Again, men have higher lung cancer lung cancer mortality rates than women; mortality decreased 2.8% for Oregon men during 1996–2000 but increased 1% annually for women. As with incidence, this sex distinction follows national trends. Of all 50 states, Oregon’s lung cancer mortality rate for 1999 ranks 36th for men but 12th for women.

### STAGE AT DIAGNOSIS

Lung cancer is generally asymptomatic in the early stages (in situ and localized).<sup>3</sup> This is corroborated by the fact that only 18% of lung cancers in Oregon were diagnosed in an early stage in 2000. Late detection likely contributes to the fact that lung cancer has one of the poorest prognoses of all cancers.<sup>4</sup>

Stage at diagnosis, lung cancer, Oregon, 1996–2000



Stage at diagnosis of lung cancer does not vary significantly by sex, nor is there any geographical or urban/rural pattern of lung cancer stage at diagnosis in Oregon. However, White non-Hispanics had a greater percentage (18%) of early-stage at diagnosis than any other race/ethnicity. American Indian/Alaskan Natives (AI/AN) had the lowest percentage of early stage at diagnosis (12%).

### RACE DATA

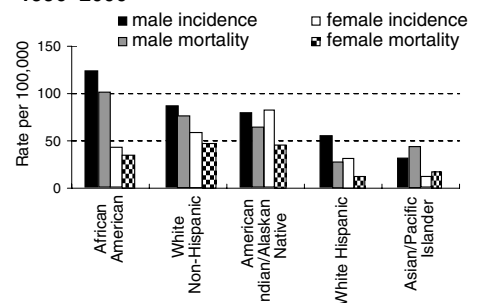
Analogous to data from the rest of the nation,<sup>1</sup> Oregon African-American (AA) men have the highest rate of lung cancer incidence and mortality, but AA women in Oregon have much lower rates than are seen nationally. Nationwide, Hispanics have the lowest lung cancer incidence and mortality rates. In Oregon,

Hispanics have the lowest mortality rates but A/PI have the lowest incidence rates. Despite low rates, A/PI have the highest mortality/incidence (M/I) ratio of 1.4. Oregon’s higher AI/AN incidence rates also differ from those observed nationwide. Oregon AI/AN men and women have nearly identical incidence rates, which deviates from all other race and ethnic groups, both locally and nationally.

Reporting difficulties with race and ethnicity make it hard to interpret these data. Mortality differences may be due in part to a greater percentage of late stage diagnoses (perhaps due to lack of access to health care). Smoking rates may account for some of the variation in incidence. AI/AN have the highest percentage of adults smoking in Oregon (44%), followed by AA (27%), Whites (21%), Hispanics (18%), and A/PI (14%). But the high M/I ratio for A/PI in incidence data as has been seen with AI/AN.

Historically, AI/AN cancer cases have been misclassified as another race in cancer registries, generally as White.<sup>2</sup> To correct racial codes for AI/AN, Oregon’s registry links with local tribal registries; Oregon’s higher AI/AN incidence rates are likely due to this rigorous linkage. This project was recently conducted at the national level; as a consequence, national AI/AN lung cancer rates are expected to increase. However, there are no comparable registries to evaluate other racial groups, such as A/PI.

Age-adjusted lung cancer rates, Oregon, 1996–2000





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Oregon's AI/AN lung cancer rates may still be an underestimate, because AI/AN who use employer-sponsored health care rather than tribal health care would not be identified through registry linkage. This may explain why lung cancer is higher in AI/AN women than in AI/AN men. AI/AN women may be more likely to use tribal health services while their male counterparts may use employer-based health systems or avoid seeking care altogether.

#### ETIOLOGY

Tobacco use is the largest cause of lung cancer. Although other important primary prevention strategies exist, such as improving air quality and promoting the consumption of fruits and vegetables, 82% of lung cancer deaths in Oregon were linked to tobacco use in 2001. Utah has the lowest smoking rate in the United States and, accordingly, Utah has the lowest lung cancer incidence and mortality rates.

The risk of developing lung cancer is correlated with the amount of tobacco exposure. A nonsmoker has a lifetime risk of developing lung cancer of less than 1%, while a heavy smoker has a risk of 30%.<sup>3</sup>

Historically, tar has been thought to be the most significant carcinogen in cigarettes. But recent evidence suggests that nicotine suppresses cell apoptosis by activating the Akt pathway, thereby circumventing one of the body's central self-defense mechanisms against cancer.<sup>5</sup> This may explain the synergistic effect smoking has when combined with other exposures, such as radon or sun exposure.

#### PREVENTION

For most smokers, addiction to tobacco begins in their youth. The earlier one quits, the greater the health benefits. Those who quit by age 35 reduce 90% of their lung cancer risk. Nonetheless, quitting at any age reverses a portion of the injurious effects of smoking.<sup>1</sup> There are a number of effective therapies for quitting smoking, including a variety of nicotine delivery systems and a non-nicotine based antidepressant, bupropion. Recommendations to stop smoking by a health-care provider during office visits can motivate smokers to quit. Counseling and behavioral therapies are very effective in smoking cessation and can be done over the phone as well as face-to-face. All Oregon Health Plan members and many commercially insured individuals are eligible for free or low-cost assistance in quitting.

Community-level approaches such as increasing the tobacco excise tax and anti-smoking education are successful in preventing tobacco use by youth and in supporting quit attempts by smokers. California was the first state to implement such a program; since its inception in 1988, California's smoking prevalence declined 24% among adults.<sup>6</sup> Concurrently, California had a 22% decrease in lung cancer incidence compared to about a 6% decline among the other National Cancer Institute supported cancer registries.

#### STATUS OF TPEP

In November 1996, Oregon voters passed Measure 44, an initiative that raised taxes on tobacco and dedicated 10% of the revenue for tobacco prevention and education. After six years of concentrated effort, tobacco consumption

in Oregon dropped 30%, about twice the national rate of decline. This means 75,000 fewer adult and 25,000 fewer youth smokers, 2,200 fewer pregnant women smokers, and 1.5 billion fewer cigarettes sold each year. In 2000, tobacco was associated with >6,000 deaths and \$1.8 billion in economic costs to Oregonians. For each year Oregon maintains the tobacco-use reductions already achieved, 1,800 lives and \$540 million are saved in our future.

In March 2003, to balance the current state budget the Oregon State Legislature reallocated the Measure 44 funding and suspended TPEP. The Oregon Tobacco Quit Line closed on April 7, 2003. At time of this publication, the budget for the biennium beginning July 2003 is still being debated. However, the Governor's recommended budget for that biennium allocates funding for TPEP at about about 40% of the level allocated last biennium by voter initiative.

Regardless of the status of TPEP, it is important for physicians to help their patients quit smoking. Guiding the patient to set a quit date and recommending nicotine replacement therapy and/or bupropion are known to increase success rates. The Oregon Health Plan and several other large commercial insurers also provide telephone counseling and classes. Refer individuals to their health plans for assistance.

#### REFERENCES

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6. CDHS, Tobacco Control Section. California Tobacco Control Update. Nov 2002.