Oregon Health Authority

Office of Disease Prevention and Epidemiology

HIV Mortality, Oregon

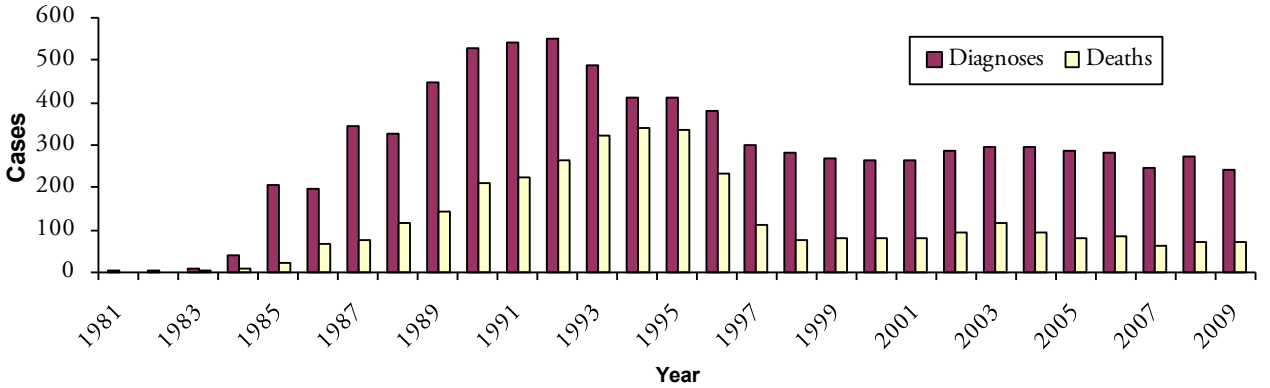
Introduction

Of 8,467 cumulative cases of HIV infection diagnosed in Oregon through the end of 2009, 3,466 (41%) had died. The advent of antiretroviral medications in the mid-1990s dramatically improved treatment outcomes with five-year survival increasing from about 40% of people diagnosed in 1990 to roughly 90% in 2004. From 2005–2009, an average of 265 people each year were diagnosed in Oregon with HIV, and during the same period an average of 74 deaths per year occurred among Oregon HIV cases (Figure 1).

Analyses of survival time for Oregon HIV cases diagnosed from 1998–2009 indicated that average survival time decreased with age at diagnosis. Probably, this difference simply reflects differences in duration of infection at the time of first positive test (i.e. infected longer = older), but may be related to decreasing capacity to combat HIV disease with age. A statistically significant difference in mean survival time was observed between people diagnosed at ages 13–29 years and people diagnosed at ages 30–44 years (difference=8.9 months; p=0.0019). After adjusting for age, there were no differences in case fatality by sex, race/ethnicity[1], region or transmission category. The absence of important differences in case fatality by race/ethnicity was observed despite differences in severity of disease at diagnosis.

For example, Hispanics with HIV were more likely than whites to meet criteria for AIDS within 12 months of testing positive (44% vs 36%) yet no more likely on average to die each year. Possible explanations for this might

Fig. 1 Oregon HIV infection diagnoses and deaths, 1981–2009



[1]A statistical difference in case fatality between American Indians/Alaskan Natives (AI/AN) and whites was observed, but the difference was unstable because of very small numbers of AI/AN cases. For example, the difference would not have been significant if a single death (instead of the two that were observed) had been observed in AI/AN cases aged >60 years.

include that better care is available to Hispanics or response to care among Hispanics is better, though these explanations seem improbable. Perhaps a more likely explanation is that if deaths among Hispanics were less likely to have been recorded in Oregon's case registry (e.g. if they occurred outside of the US or outside of Oregon) then this group would have a lower observed mortality rate than other races/ethnicities. As one would expect, people who did not experience progression of their infection to AIDS during the period of observation were less likely to die than those who experienced progression to AIDS (Rate Ratio per 100 person-years=0.37; 95% CI: 0.18, 0.76).

Data from Oregon Vital Statistics on underlying causes of death among people with HIV who died during 2003–2009, show that HIV disease has consistently been determined to be the underlying cause of death in over 70% of deaths among people with known HIV infection (Table 1). Cases for which HIV disease is ultimately determined to be the single underlying cause of death include those who died with AIDS-related opportunistic infections or cancers, or other conditions determined by Vital Statistics to have been a consequence of underlying HIV disease. Those whose underlying cause of death was not HIV disease most commonly died of unrelated cancers, heart disease, unintentional injuries or suicide.

Table 1. Underlying cause of death, 2003–2009* **

	Year of death						
	2003	2004	2005	2006	2007	2008*	2009*
HIV Disease	77	52	44	51	54	39	44
Tuberculosis	***0***	***0***	***0***	***1***	***0***	***0***	***0***
Septicemia	0	0	0	2	0	0	0
Viral hepatitis	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Cancer	46	8	13	4	5	5	
Benign neoplasm	***0***	***0***	***1***	***0***	***0***	***0***	***1***
Diabetes mellitus	1	0	1	0	0	1	2
Nutritional deficiencies	***0***	***0***	***0***	***1***	***0***	***0***	***0***
Parkinson disease	0	0	0	0	0	1	0
Heart disease	***1***	***1***	***1***	***6***	***0***	***1***	***2***
Hypertension	0	0	1	1	0	0	0
Pneumonia or influenza	***0***	***0***	***0***	***1***	***0***	***0***	***1***
Chronic lung disease	0	1	0	3	1	2	1
Aspiration pneumonitis	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Chronic liver disease	1	1	3	2	1	4	1
Congenital anomalies	***0***	***0***	***0***	***1***	***0***	***0***	***0***
Perinatal complications	0	0	0	0	0	0	0
Unintentional injury	***0***	***2***	***4***	***5***	***1***	***0***	***2***
Suicide	1	0	3	3	0	0	0
Homicide	***0***	***0***	***0***	***1***	***0***	***0***	***0***
All other causes	3	2	4	8	2	2	3
Total	**88**	**65**	**70**	**99**	**63**	**55**	**62**

*Final determination of underlying cause of death is not available for some HIV/AIDS cases that died during 2008 and 2009. These cases are not included in the table.
**These data exclude deaths of Oregon cases which occurred outside of Oregon.