The Impact of Veterans Affairs Cancer Reporting in New Hampshire

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Background

Until August 2007, cancer reports from the Veterans Administration (VA) Medical Center in New Hampshire were transmitted to the New Hampshire State Cancer Registry as required by state law. In 2007, the VA issued a general directive requiring the execution of a Data Use Agreement between state cancer registries and VA facilities. As a result, data were not obtained from VAMC in New Hampshire effective after approximately mid June 2006. In June 2011, an agreement was executed between the VHA and New Hampshire State Cancer Registry, allowing NHSCR to receive cancer incidence data from VHA Central Cancer Registry for patients who were NH residents. We examined the effect of the first data transmission, received August 2011, on the estimated cancer incidence rates in New Hampshire.

Methods

The VA cases were merged into the registry database using normal case processing procedures. We then assigned one of three possible categories to each cancer case in the database; (1) cases that contained no VA data ("non-VA cases"); cases reported both by the VA and by another (non VA) facility including pathology laboratories ("double reported cases"); and cases reported by a VA facility that had not been reported to NHSCR through other mechanisms ("VA only cases").

For 1995-2009, we examined an extract of all cases using NPCR CSS criteria using SEER*PREP 2.4.5 and SEER*STAT 7.0.5. Population numbers were taken from the SEER Website, 1969-2011, released July 21, 2011 (http://seer.cancer.gov/popdata/index.html). We used the SEER*PREP option "Behavior Recode for Analysis Derived" to identify malignant behavior (http://seer.cancer.gov/behavrecode/index.html).

We calculated age-adjusted rates for malignant cancers diagnosed 1995-2009, according to the classification of data source. Using all cases, we estimated New Hampshire's cancer incidence rates by gender for the period 1995-2009, and defined this as the gold standard reflecting what is used to calculate rates for standard state publications. Next, we calculated the incidence rate without VA-only cases but including double-reported cases; this represents the estimate we would have obtained without the VA data transmission. The difference between the first and second rates represents the impact of VA cases on NH cancer rates. We compared the age-adjusted rates for major cancer sites to assess the contribution of VA cancer reporting to incidence estimates.

Results

NHSCR received a single transmission of 3265 reports for cancers diagnosed between 1964 and 2011 from 25 facilities; of these, 98% were diagnosed between 1995 and 2009. The majority of cases (79%) were reported by a VAMC in New Hampshire (47%) and a second facility in Vermont (32%) that lies less than two miles from the VT/NH border. Transmitted cases were 97% male, with just 105 female cases. Therefore, we restricted our analysis to males.

Table 1 presents the traditional 19 major sites plus a summary for sites, males, 1995-2009, New Hampshire residents. The first set of rates is for all cases, 1995-2009. These results reflect those reported in state and national reports for New Hampshire. The second set of rates reflects the incidence that New Hampshire would see if we had not received any reports from the VA. These rates include "double reported" cases, i.e. those that were also reported by other facilities and so do not depend on VA reporting to reach the State Registry.

Overall, NH incidence rates would be 22.5/100,000 per year lower if we did not receive cases from the central VA. Three rates are affected to a statistically significant degree by VA reporting: overall cancer incidence (all sites), lung and bronchus, and prostate. This is not surprising because 26% of transmitted cases for males were prostate, and 16% of cases were lung and bronchus.

Figures 1 and 2 present a breakdown of the sources of the VA cases. **Figure 1** shows New Hampshire cancers that would be missed with VA cases. About 3.8% of all reports came from just VA facilities while another 2.1% of cases were reported by the VA and another facility. **Figure 2** shows the state of origin of the VA cases. The majority are from the NH VA facility, 53%, with 24% from Vermont, and 13% from other states. The other states included Florida, California, Maine, New York, and Connecticut.

Results, cont.

Table 1. Cancer incidence in New Hampshire calculated with and without Veterans Administration data

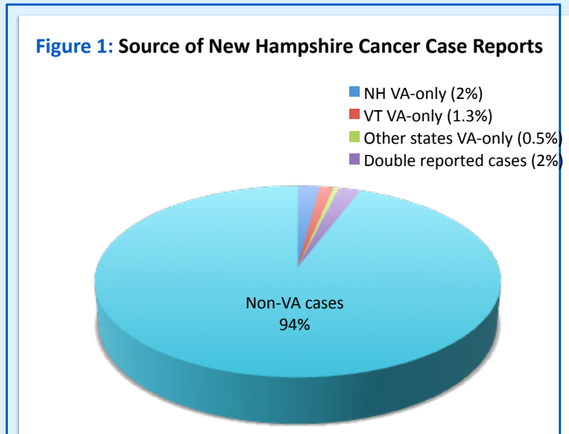
	Incidence with all cases included				Incidence without VA reporting						
Site	Rate	Lower CI	Upper CI	Count	Rate	Lower CI	Upper CI	Count	Incidence rate ratio	Lower CI	Upper CI
All Sites*	**579.1**	**573.9**	**584.3**	**49,936**	**556.6**	**551.5**	**561.7**	**48,026**	**1.04**	**1.03**	**1.05**
Oral Cavity and Pharynx	16.2	15.3	17	1,479	15.3	14.5	16.1	1,401	1.06	0.99	1.14
Esophagus	11.7	11	12.5	1,009	11.2	10.5	11.9	963	1.04	0.95	1.15
Stomach	9.0	8.4	9.7	753	8.8	8.2	9.5	736	1.02	0.93	1.12
Colon and Rectum	61.1	59.4	62.8	5,092	59.0	57.4	60.7	4,928	1.04	0.99	1.08
Liver	5.8	5.3	6.4	523	5.5	5	6.1	495	1.05	0.91	1.22
Pancreas	12.8	12.1	13.7	1,077	12.5	11.7	13.3	1,048	1.02	0.94	1.12
Larynx	7.9	7.4	8.6	709	7.6	7	8.2	682	1.04	0.93	1.16
Lung and Bronchus*	**85.8**	**83.8**	**87.8**	**7,244**	**81.9**	**79.9**	**83.9**	**6,917**	**1.05**	**1.01**	**1.08**
Prostate*	**160**	**157.3**	**162.7**	**14,076**	**153.9**	**151.2**	**156.5**	**13,545**	**1.04**	**1.02**	**1.06**
Testis	6.8	6.3	7.4	635	6.8	6.3	7.3	630	1.00		
Urinary Bladder	47.8	46.2	49.3	3,923	45.6	44.1	47.1	3,746	1.05	0.99	1.10
Kidney and Renal Pelvis	17.5	16.7	18.4	1,572	16.8	15.9	17.7	1,507	1.04	0.97	1.12
Brain/Nervous System	9.1	8.5	9.7	827	9.0	8.4	9.7	822	1.01	0.92	1.11
Thyroid	4.8	4.4	5.3	452	4.7	4.3	5.2	440	1.02	0.91	1.15
Hodgkin Lymphoma	3.9	3.5	4.3	356	3.8	3.4	4.3	352	1.03	0.89	1.19
Non-Hodgkin Lymphoma	23.7	22.7	24.8	2,065	23	21.9	24	1,999	1.03	0.97	1.09
Myeloma	7.4	6.8	8	621	7.1	6.6	7.7	602	1.04	0.93	1.17
Leukemia	17.6	16.7	18.6	1,500	16.7	15.9	17.7	1,427	1.05	0.97	1.14
Miscellaneous	15.7	14.9	16.6	1,280	15.1	14.2	15.9	1,224	1.04	0.96	1.13

Rate: Age-adjusted incidence per 100,000 population

CI: 95% Confidence intervals

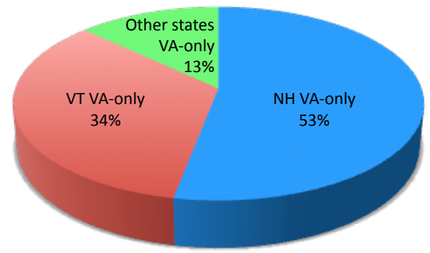
*Statistically significant differences in incidence, with and without VA reporting. (Parkin DM, Muir, CS, Whelan SL (eds). *Cancer Incidence Five Continents, Volume VI.* Lyon, France: IARC, 1992, p. 869.).

Figure 1: Source of New Hampshire Cancer Case Reports



Results, cont.

Figure 2: State of Origin of VA Cancer Reports Among New Hampshire Residents



Discussion

These results demonstrate several lessons in cancer surveillance.

- First, it is important for state registries to reach agreements with the VA that permit the inclusion of VA data in their cancer registries.
- Second, our results demonstrate the importance of capturing VA cases reported from inside and outside the state. Of the VA cases we received, 47% came from outside New Hampshire. Many factors impact the location where patients obtain medical care. The importance of out of state cases is the central premise of data exchange agreements: the need to capture cases on all residents seeking care outside their immediate area. Some state registries receive VA cases only from facilities within their state; our results show that a national approach may be more effective.
- Third, failure to ascertain a relatively small number of cases concentrated in one or two sites can greatly impact site-specific rates and overall cancer incidence rates for New Hampshire.

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