



Breast cancer multiple primary and histology data quality and their impact on cancer incidence and mortality

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Background

SEER MPH (Multiple Primary and Histology) manual was effective 1/1/2007. There is a need to review the MPH data quality before and after the effective date, to show the usage of variables affecting correct MPH case reporting, to establish a method for identification of potential wrong MPH records, and to explain correct use of MPH records in survival statistics.

Materials and Methods

A total of 705190 patients with breast cancer diagnosed between 2004 and 2010 were retrieved from SEER 18 Research database. These patients were stratified by sequence number, number of breast cancers, numbers of all cancers and year of diagnosis. All patients with 2 or more breast cancer records were identified and evaluated based on variables of AJCC 6th T and M stages, treatments, and MPH timing rules. *Kaplan–Meier* was used to compare the breast cancer survivals among the four groups: single breast cancer primary (sequence number = 0), single and first primary (sequence number = 0 or 1), combined single, first and second primary, and combined all breast cancer records.

Results

Table 1. 17.6% patients have more than one cancer

	Records	Patients	Patient/record (%)
All cancers	855537	705190	82.43
Breast cancer	779880	708228	90.81
Invasive breast	627250	585308	93.31

Results

Table 2. Patients may have up to 5 breast cancers

	2004	2005	2006	2007	2008	2009	2010
1	56020	55534	57934	59949	61682	63330	61886
2	8921	8468	8718	9517	9967	10118	9466
3	599	527	622	711	763	738	667
4	55	41	40	45	53	64	46
5	6	2	3	10	4	11	2

Table 3. Breast cancer MPH rate is stable before and after 2007

	2004	2005	2006	2007	2008	2009	2010
1	85.4	86	86.06	85.36	85.12	85.28	85.87
2	13.6	13.11	12.95	13.55	13.75	13.62	13.13
3+	1	0.88	0.98	1.08	1.13	1.09	0.99

Table 4. Histology type in patients with 1-5 breast cancer primaries

	1	2	3	4	5
8500	65.31	57.41	57.27	45.65	50
8520	8.84	14.59	12.14	19.57	50
8523	7.85	7.8	7.95	8.7	
8522	4.9	6.45	5.7	4.35	
8201	1.8	2.13	2.4	6.52	
8501	1.74	1.65	1.95		
8480	1.6	1.54	2.4		
8230	1.31	1.69	1.5	4.35	
8010	1.05	1.06	1.2	4.35	
8140	0.63	0.52	0.3		
Total (n)	61886	9466	667	46	2

Results – cont.

Table 5. Cause of death in patients with 1-3 breast cancer primaries

	1	2	3
Alive	92.96	92.43	91.49
Breast	4.02	4.45	5.24
Diseases of Heart	0.71	0.68	0.87
Other Cause of Death	0.39	0.42	0.42
Miscellaneous Malignant Cancer	0.2	0.22	0.17
Lung and Bronchus	0.19	0.16	0.28

Conclusions

More than 18% of breast cancer patients have more than one cancer.

About 9% of breast cancer patients have more than one breast cancer.

About 7% of patients with in situ breast cancers have more than one in situ breast cancer.

A patient may have up to 5 breast cancers in different times, histologies, and behaviors, MPH manual v2007 seems no obvious impact on breast cancer MPH rates.

Multiple breast cancers have similar histology distribution to single breast cancer.

Multiple breast cancers have similar cause of death to single breast cancer.