

Collecting Comorbidities from Statewide Administrative Data

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Overview

- Central registry data on comorbidities is often missing or incomplete, even though comorbidities are vital for understanding the burden of cancer.
- Comorbidity data can be augmented by linking registry data with statewide administrative data such as hospital discharge data, emergency room data and ambulatory surgery center data.
- By linking California Cancer Registry (CCR) data to statewide hospital and ambulatory surgery center data we were able to obtain comorbidities for 74% of tumors compared to 33% of tumors which had comorbidities reported to the CCR.
- Successful linkage differed by cancer site ranging from 87% for pancreatic cancer to 45% for melanoma.
- Hospital discharges had the highest linkage rate (53%) while ambulatory surgery (30%) and emergency department data (22%) had lower linkage rates.

Background

Comorbidities are important to understanding cancer diagnosis and care. Comorbidities are associated with differential stage at diagnosis, treatment and survival for numerous types of cancer and information on comorbidity helps researchers gain a full understanding of the burden of cancer. Despite the importance of this data, central registries often lack complete and accurate comorbidity data.

Although NAACCR specifies 10 comorbidity fields, collection of these fields is spotty. Comorbidities are only mandatory for CoC facilities resulting in a large number of missing values. In addition, comorbidities are only collected when they are directly coded on the medical record; stated comorbidities without an associated ICD code are not recorded by tumor registrars.

The California Office of Statewide Health Planning and Development creates three datasets that may be useful in collecting comorbidities: Patient Discharge Data (PDD), Emergency Department Data (EDD) and Ambulatory Surgery Data (ASD). Each dataset includes demographic information, dates of service and up to 25 diagnoses in the form of ICD-9 codes.

Objective

We aimed to augment existing CCR comorbidity data with data from OSHPD PDD, EDD and ASD datasets and to compare completeness of data from each source.

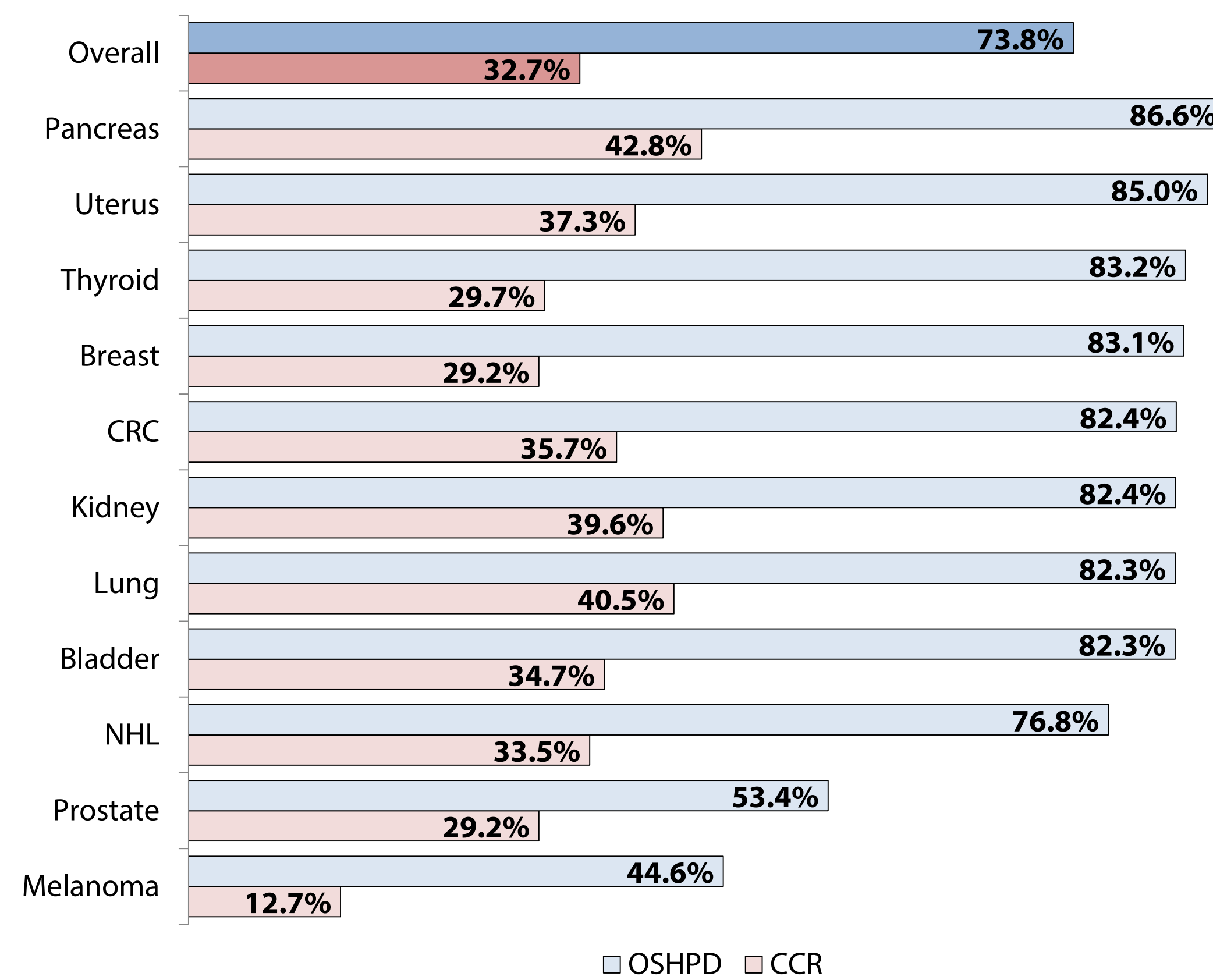
Methods

We used CCR data to locate all patients diagnosed with cancer in California between February 1st, 2011 and June 30th, 2011. We probabilistically linked these patients with OSHPD PDD, EDD and ASD data based on social security number, date of birth, sex and zip code. We then found OSHPD records containing at least one comorbidity where the discharge or visit was between 30 days before and 180 days after the date of cancer diagnosis. We report overall results and results stratified by OSHPD data source and tumor site based on SEER's 2008 ICD-O-3/WHO site recode definition.

Results

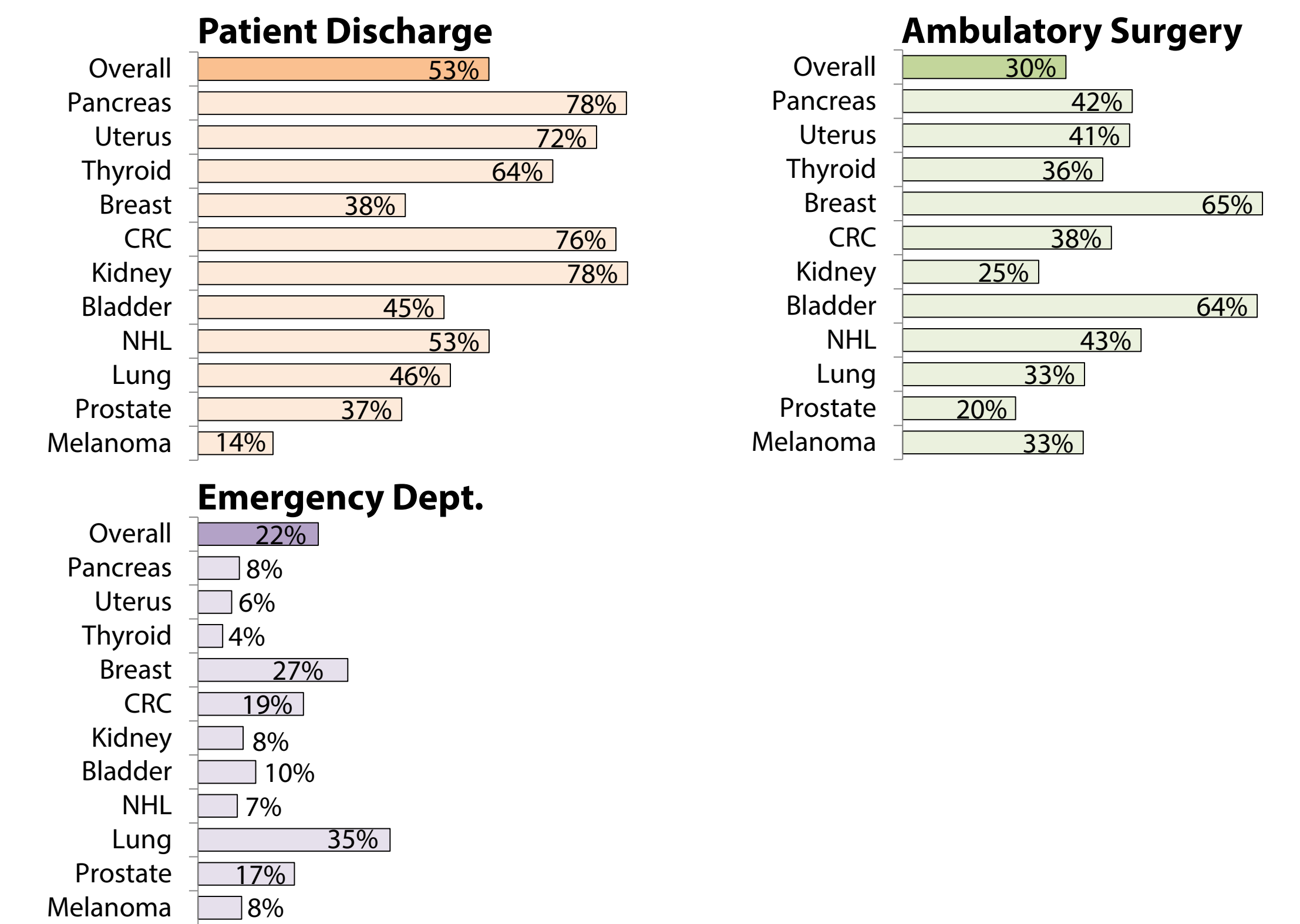
72,847 tumors were identified in this period. Overall we successfully linked CCR to OSHPD data to obtain at least one comorbidity for 53,793 tumors (74%). This compares to 23,786 tumors (33%) with comorbidities reported to CCR. We obtained comorbidities for at least 80% of the tumors diagnosed with a primary site of the pancreas, uterus, thyroid, breast, colon and rectum, kidney, lung and bladder. Melanoma, prostate and non-Hodgkin lymphoma had the lowest match rates at 44.6%, 53.4% and 76.8% respectively. All sites had a higher percentage of tumors with comorbidities from OSHPD than from the CCR.

Figure 1. Percentage of CCR tumors with comorbidities reported compared to percentage obtained through OSHPD linkage



Hospital discharge data had the highest match rate with 53% of tumors linked to at least one discharge. Ambulatory surgery data (30%) and emergency department data (22%) had lower linkage rates. Different sites had different linkage rates by data source. Pancreas, uterus, thyroid, colon and rectum, and kidney had high linkage rates with hospital discharge data while breast and bladder had high linkage rates with ambulatory surgery center records.

Figure 2. Percentage of CCR tumors linked to OSHPD by tumor site and data source



Conclusion

Comorbidity data can be obtained from linkages with administrative datasets. By linking CCR data with hospital admissions, ambulatory surgery center and emergency department records we were able to obtain comorbidities at a much higher rate than through reporting to the registry alone. Different tumor sites and data sources have different rates of linkage. By combining comorbidities from different data sources a higher linkage rate is possible. Adding ambulatory surgery data to hospital discharge data is particularly important for sites where patients are not always admitted to a hospital for treatment such as breast and bladder cancer. Since this type of linkage is routinely performed by registries, this method can be implemented relatively easily.

Although we were able to obtain comorbidities for a large percentage of tumors, we were not able to validate the accuracy of this data. Under-recording of comorbidities in administrative data is known to be a problem^{1,2} so this method may miss important diagnoses. Further studies involving a gold-standard dataset are needed to measure the accuracy of this data.

References

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