



Linkage of Electronic Pathology Laboratory Reporting and Uniform Billing Data to Identify Cancer Cases for a Registry-Based Epidemiologic Study in New Jersey

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Abstract

Implementation of electronic pathology laboratory reporting (E-path) from several hospital-based and national laboratories has improved the timeliness and completeness of cancer reporting in the New Jersey State Cancer Registry (NJSCR) and is a resource for rapid case ascertainment in epidemiologic studies. One limitation is the lack of information on race in E-path for identifying cases for studies that are enrolling cases from specific racial groups. The NJ Department of Health and Senior Services Uniform Billing (UB) hospital discharge data are a potential resource for obtaining information on patients, and the data are generally available five days after the end of the month for all patients billed the previous month. We recently utilized this resource to identify African-American breast cancer patients for an on-going study (the Women's Circle of Health Study). We identified 1702 women diagnosed with breast cancer reported to E-path during January through July 2010, all with unknown race. We used LinkPlus to match the E-path records with the NJ UB file by name, date of birth, social security number and address and found 1088 matches (64% of the total). We identified 144 potentially eligible cases for the study, and there were only 19 patients with unknown race (1.7% of the total matches). Possible reasons for cases reported by E-path who did not match to the UB file include delays in patients receiving treatment, delays in hospitals sending billing information and delays in processing of the UB data. Our preliminary results suggest that the linkage of the UB data with E-path is a useful method to ascertain missing patient information for epidemiologic studies that would not have otherwise been obtained until the hospitals submitted cases six months after diagnosis. Our presentation will discuss activities related to this project, plans for future testing, and the potential for this linkage becoming part of the NJSCR standard operations workflow.

Introduction

- Electronic pathology laboratory reporting (E-path) of cancer cases is a potentially cost-efficient resource for rapid case ascertainment in epidemiologic studies.
- Currently, 14 hospital-based and 4 national laboratories are reporting to the New Jersey State Cancer Registry (NJSCR) by E-path, accounting for approximately 35% of all cases reported to the NJSCR.
- In addition, 5 hospitals in New Jersey are expected to start reporting by E-path shortly, and 7 hospitals are in the planning phase.
- A major limitation is the lack of information on race/ethnicity in E-path for identifying cases for studies enrolling cases from specific racial groups.
- Uniform Billing (UB) hospital discharge data are a potential resource for obtaining race or other information on patients.
- We used E-path and UB data to identify African-American breast cancer patients for an ongoing study (the Women's Circle of Health Study).

Methods

Data Sources:

- E-path data files (AIM, Artificial Intelligence in Medicine, Inc.).
 - E-path reports come into the Registry on a near real-time basis.
- New Jersey Department of Health and Senior Services Uniform Billing (UB) hospital discharge data.
 - Data are generally available 5 days after the end of the month for all patients billed the previous month.

Methods:

- Identified 1,702 women diagnosed with breast cancer reported to E-path during January through July 2010, all with unknown race.
- Used LinkPlus (version 2.0) to match the E-path records with the NJ UB file by first and last name, date of birth, social security number, street address, and zipcode.

Results

- Of 1,702 women diagnosed with breast cancer reported to E-path, we found 1,088 matches with the NJ UB file (64% of the total) in the initial match.
- We identified 144 potentially eligible cases for the study.
- There were only 19 patients with unknown race (1.7% of the total matches).

New Jersey Female Breast Cancer Patients* Reported by E-path With Race Identified from the NJ Uniform Billing Data

Race	No.	Percentage
White	786	72.2%
Black	144	13.2%
American Indian/Aleutian/ Eskimo	2	0.2%
Asian	51	4.7%
Pacific Islander	3	0.3%
Other race	83	7.6%
Unknown	19	1.7%
Total	1,088	

*614 patients identified from E-path records who did not match to the NJ UB file are not included.

- Of the 614 records from E-path that did not initially match to records in the NJ UB file, 108 (17.5%) matched during a second linkage conducted with an updated NJ UB file.
- 11 additional potentially eligible cases were identified for the study.

Discussion

- Possible reasons for cases reported by E-path who did not match to the UB file include:
 - Delays in patients receiving treatment
 - Delays in hospitals sending billing information
 - Delays in processing of the UB data
 - Patients seeking treatment at out-of-state hospitals
- Efficient in terms of study staff time and potential cost savings – reduces numbers of hospitals to visit and phone calls to physicians' offices to obtain missing patient information.
- E-path data can also be used to obtain information on the patient's physician and other information useful for studies, as well as information on conditions other than cancer.

Limitations

- Cases reported by and treated at out-of-state facilities are not included in the New Jersey UB file.
- Identification of cases diagnosed with specific types of cancer from the E-path data usually requires text searches of the pathology reports and oversampling, which results in staff needing to review larger numbers of pathology reports.

Conclusions

- Preliminary results suggest the linkage of the UB data with E-path records is a useful method to ascertain missing patient information for epidemiologic studies that would not have otherwise been obtained until the hospitals submitted cases six or more months after diagnosis.
- The potential to link registry data with information on comorbidity in the UB data could be a useful resource for epidemiologic studies and analyses of registry data.