Utilization of Medical Records vs Insurance Claims for Outcomes Research: Learnings From Validation of an Ovarian Cancer Line of Therapy Algorithm in US Data

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Background and Objectives

- Real-world evidence provides the opportunity to evaluate the impact of new treatments and help inform clinical decision making, however answering complex questions requires appropriate data.
- Insurance claims and medical records are each important sources of real-world data but may have different strengths and weaknesses: claims contain information about healthcare resource utilization and costs but can lack clinical details such as line of therapy (LOT), whereas medical records contain clinical information but are less likely to have costs.
- The objectives of this study were to (1) validate a claims-based algorithm for identifying LOT in ovarian cancer, and (2) assess the match between claims and medical records for cancer-related treatments and services (ovarian cancer–related surgeries, radiation, *BRCA* testing) and clinical events of interest in patients with ovarian cancer.

Discussion and Limitations

- Both claims and medical records can effectively identify individual regimens and LOT.
- Because claims contain information from multiple providers, they may capture procedures not included in the medical record from a single provider.
- Not all clinical events, even ones that are meaningful to patient quality of life, are billable. These may not appear in claims but are more likely to be documented in physician notes.
- Charts from the primary oncologist may miss mortality data, especially if a patient is transferred to hospice care or to the hospital. Some claims capture mortality better because they are linked to national sources (eg, the Social Security Administration Death Index).
- Some clinical data may have been missing for patients treated by multiple providers because this study included abstraction of charts from only 1 oncology provider per patient.
- All patients in the study population had commercial or Medicare Advantage insurance; therefore, results may be less generalizable to other populations.

Conclusions

- The claims-based algorithm demonstrated strong concordance with medical records for identifying LOT in ovarian cancer insurance claims data and would therefore be reliable for use in outcomes studies.
- Treatment regimens captured during follow-up were similar between claims and medical records.
- Claims (with mortality data) provided more complete data on procedures, biomarker testing rates, and mortality compared with medical records.
- Medical records more accurately identified specific clinical events compared with claims.
- These findings provide insight on the strengths and opportunities to consider when selecting specific datasets for oncology research.
- Results suggest that selection of a dataset should be based on the outcome of interest as no one size fits all.

Methods

Data Source

- Data were from the Optum Research Database (ORD), a large US database containing administrative claims for commercial and Medicare Advantage insurance plans and chart reviews of corresponding medical records.

Algorithm Development

- A claims-based algorithm was developed utilizing the ORD to identify LOTs for advanced ovarian cancer based on timing of events, therapies, and treatment gaps (described in detail previously).[1]
- The current study validated the algorithm among patients in the ORD who had a diagnosis of ovarian cancer and initiated chemotherapy between 01 Dec 2014 and 15 Sep 2017.
  - Study end date (15 Sep 2017) was chosen to allow up to 33 months of follow-up time.
  - Corresponding medical charts from a single oncologist for each patient were abstracted for a minimum of 12 months up to 33 months of follow-up time for a convenience sample of patients whose oncologists agreed to participate.

Statistical Analysis

- Descriptive statistics, percentage agreement, and Cohen's kappa coefficients (unweighted and weighted) were reported to assess the magnitude of agreement for LOTs between claims and medical records.
- Proportions of patients with evidence of treatment characteristics, outcomes, and specific clinical events during follow-up were determined using Kaplan-Meier estimation.

1 White J, Simmons D, Blank SV, et al. Validation of an ovarian cancer line of therapy algorithm for real-world outcomes research in insurance claims. Poster presented at: SGO Annual Meeting on Women's Cancer; 2022; Phoenix, AZ, USA.

Results

Study Population

- Data from a total of 294 patients were included (Figure 1).
- Mean (SD) age was 64.9 (12.3) years at diagnosis, 62% of patients had Medicare Advantage insurance, and most patients (64%) had advanced (stage III/IV) ovarian cancer (Table 1).

Algorithm Performance

- The claims algorithm demonstrated substantial agreement with medical records for identifying number of lines and moderate-to-substantial agreement for type of therapy.
  - Weighted kappa statistics for total number of LOTs and total number of maintenance LOTs were 0.65 and 0.62, respectively (p<0.001 for both).
  - Weighted kappa statistics for neoadjuvant and adjuvant therapy were 0.56 and 0.62, respectively (p<0.001 for both).
- Algorithm performance for lines of therapy and regimen match was best for identifying early vs later regimens (82% and 86% agreement for LOTs 1 and 2 compared with 78% and 75% agreement for LOTs 3 and 4).

Cancer Related Treatments, Clinical Events, and Outcomes

- Treatment regimens identified during follow-up were similar between claims and medical records (Figure 2).
- Compared with medical records, claims identified a numerically higher percentage of patients with follow-up surgery and *BRCA* testing (Figure 3).
- Claims, which are linked to the Social Security Administration Death index, identified a numerically higher mortality compared with medical records (76 deaths in claims vs 9 deaths in charts) (Figure 4).
- Compared with claims, medical records identified a numerically higher percentage of patients with clinical events during follow-up, with the exception of blood transfusions (Figure 5).

Results (continued)

Figure 1. Patient Selection and Attrition

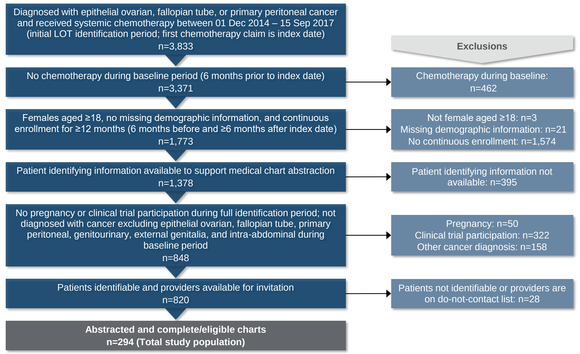
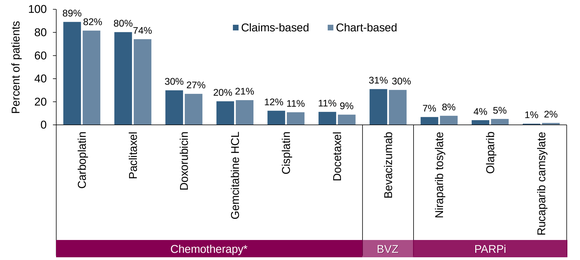


Table 1. Patient Characteristics

Characteristic	Total study population N=294
Age at diagnosis, years, mean (SD)	64.9 (12.3)
Region, n (%)	
Northeast	38 (12.9)
Midwest	102 (34.7)
South	129 (43.9)
West	25 (8.5)
Insurance type, n (%)	
Commercial	111 (37.8)
Medicare	183 (62.2)
Charlson comorbidity score, mean (SD)	5.4 (2.4)
Cancer stage at index date, n (%)	
Stage I	34 (11.6)
Stage II	21 (7.1)
Stage III	139 (47.3)
Stage IV	50 (17.0)
Not available	50 (17.0)

SD, standard deviation.

Figure 2. Treatment Regimens Over 33 Months



BVZ, bevacizumab; PARPi, poly(ADP-ribose) polymerase inhibitor.
*Chemotherapy regimens used by >10% of patients are shown

Figure 3. Analysis of Procedures and Testing Over 33 Months

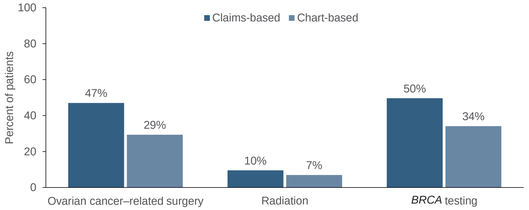
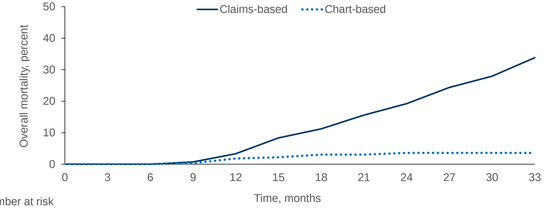


Figure 4. Kaplan-Meier Analysis of Mortality Over 33 Months

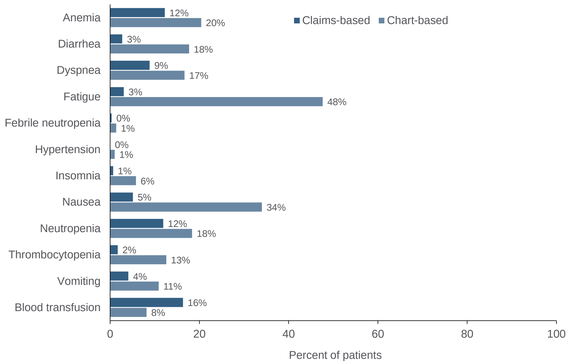


Number at risk

Claims	294	294	294	279	256	230	209	187	175	159	139	123
Chart	294	294	294	283	257	242	224	207	180	165	128	5

The graph represents cumulative number of patients with reported mortality over time. The table represents the number of patients at risk for a mortality event (no event and not censored) over time.

Figure 5. Proportion of Patients with Clinical Events Over 12 Weeks



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