

The Role of Patient Selection Criteria in Identifying Ovarian Cancer Patients in a Retrospective Database Analysis

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BACKGROUND

- Retrospective insurance claims databases are commonly used in health care research to assess various outcome measures such as patient demographics, treatment characteristics, health care utilization, health care costs, and medication adherence.
- Since physician charts are rarely available to confirm diagnoses, care must be taken when choosing patient populations.
- Specifically, attention needs to be paid when examining claims data for conditions where rule-out diagnoses may be present (e.g., in cancer).

OBJECTIVE

- The goal of this study was to show how variability in patient selection criteria affects sample size and chemotherapy treatment rates in a retrospective database analysis of an ovarian cancer (OC) population.
 - National Comprehensive Cancer Network (NCCN) guidelines recommend that patients with OC receive chemotherapy regardless of the disease stage, so we expected chemotherapy treatment rates to be high.

METHODS

Data Source – LifeLink Database (Formerly PharMetrics)

- LifeLink is a commercially available administrative claims database.
- The database includes:
 - Information from 95 managed care health plans covering more than 61 million unique patients between 1997 and 2009.
 - Information on patient-level demographics and period of health plan enrollment; primary and nonprimary diagnoses; detailed information about hospitalizations, diagnostic testing, and therapeutic procedures; inpatient and outpatient physician services; prescription drug use; and cost data in the form of managed care reimbursement rates.
- Data are tracked longitudinally within patients via de-identified and unique patient numbers.

Inclusion Criteria

- Patients were initially selected if they met the following inclusion criteria: at least one diagnosis of OC (ICD-9-CM codes 183.0x) between January 1, 2002 and December 31, 2007 (first OC diagnosis date termed index), 6 months pre- and 12 months post-index eligibility, and no OC diagnosis in the 6 months pre-index (cohort 1).
- Additional criteria were imposed to further refine the sample and assess variation in chemotherapy treatment rates:
 - First, patients were required to have at least two OC diagnoses at least 14 days apart (cohort 2).
 - Next, patients were also required to have both OC diagnoses on a record labeled as medical, surgical, facility, or pharmacy (i.e., ancillary [lab] records were excluded) (cohort 3).

Outcome Measures

- Patient demographics (e.g., age, gender, primary expected payer)
- Chemotherapy treatment

Data Analyses

- Results were reported at each stage of the selection criteria.
- All analyses were descriptive in nature and included frequency distributions for categorical variables and means and standard deviations (SD) for continuous variables.
- All analyses were conducted using SAS version 9.1.

RESULTS

- A total of 37,172 patients had at least one diagnosis of OC (Figure 1).
 - Of those, 17,591 patients had 6 months pre- and 12 months post-index eligibility, and 16,418 patients had no OC diagnosis in the 6 months pre-index (i.e., cohort 1)
 - When patients were also required to have one additional OC diagnosis at least 14 days after the index date, the sample size dropped to 7,431 patients (i.e., cohort 2)
 - When OC diagnoses on ancillary records were excluded, 4,750 OC patients were identified (i.e., cohort 3)
- Patients in cohort 1 were slightly younger than patients in cohort 3 (Table 1).
 - Distributions for geographic region, health plan type, and payer type were similar across all cohorts.
- Rates of chemotherapy treatment varied between study cohorts; patients with the least stringent selection criteria had the lowest percentage treated with chemotherapy (i.e., 26% of patients in cohort 1 received chemotherapy) and patients with the most stringent selection criteria had the highest percentage treated with chemotherapy (i.e., 53% of patients in cohort 3 received chemotherapy) (Figure 2).

Figure 1. Summary of Sample Selection Criteria and Patient counts, by Cohort

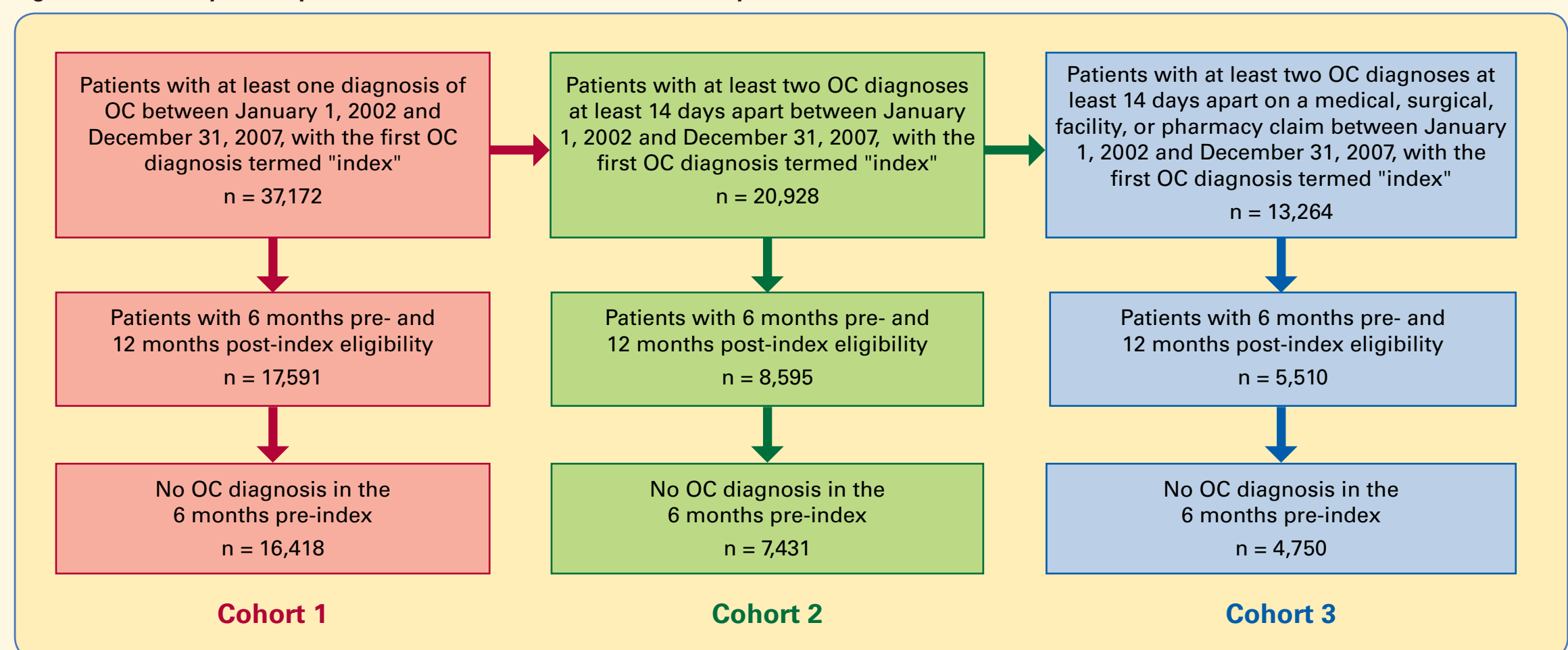
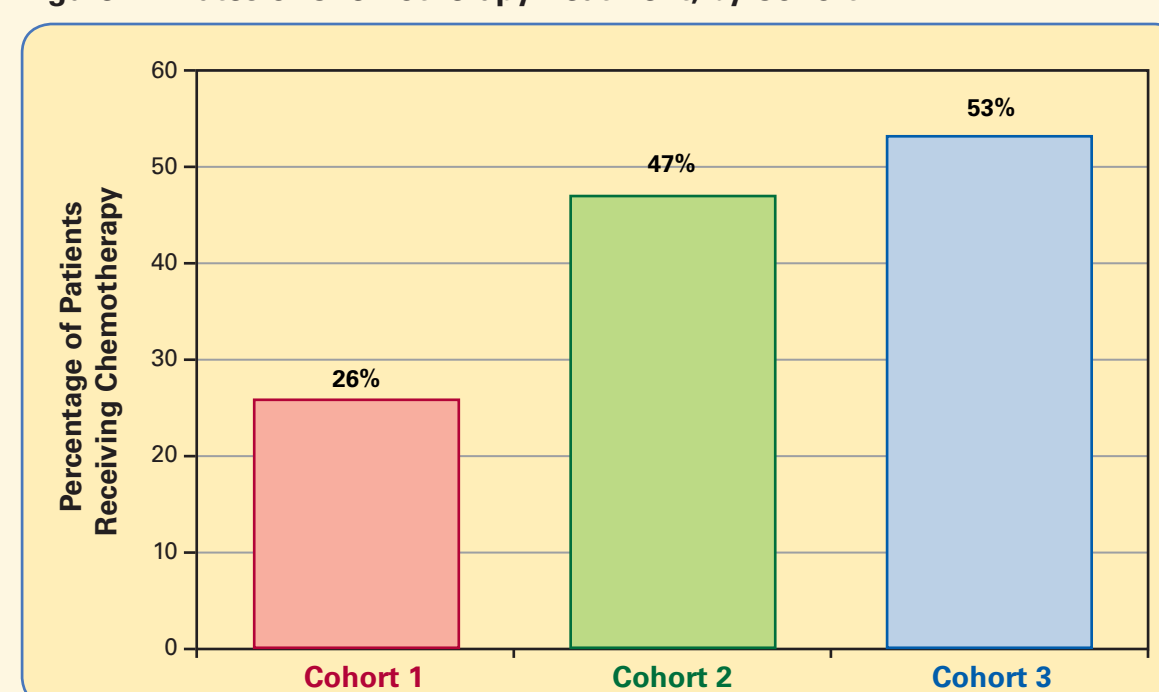


Table 1. Patient Demographics, by Cohort

Characteristic	Cohort 1		Cohort 2		Cohort 3	
	n	%	n	%	n	%
Total (N)	16,418		7,431		4,750	
Age						
< 18	241	1.47	62	0.83	43	0.91
18-24	244	1.49	78	1.05	54	1.14
25-34	731	4.45	270	3.63	170	3.58
35-44	2,147	13.08	729	9.81	433	9.12
45-54	4,399	26.79	1,878	25.27	1,154	24.29
55-64	4,550	27.71	2,220	29.87	1,394	29.35
≥ 65	4,106	25.01	2,194	29.52	1,502	31.62
Mean (SD)	55.55 (15.22)		57.70 (14.38)		58.16 (14.63)	
Geographic region						
East	5,354	32.61	2,113	28.43	1,267	26.67
South	5,514	33.59	2,486	33.45	1,596	33.60
Midwest	3,961	24.13	2,054	27.64	1,366	28.76
West	1,589	9.68	778	10.47	521	10.97
Health plan type						
HMO	4,210	25.64	1,746	23.50	1,101	23.18
PPO	6,984	42.54	3,131	42.13	2,027	42.67
POS	1,755	10.69	807	10.86	535	11.26
Indemnity	2,801	17.06	1,244	16.74	754	15.87
Consumer directed	68	0.41	32	0.43	20	0.42
Multiple types	388	2.36	388	5.22	262	5.52
Missing/unknown	212	1.29	83	1.12	51	1.07
Payer type						
Commercial	14,225	86.64	6,400	86.13	4,087	86.04
Medicaid	171	1.04	68	0.92	43	0.91
Medicare	712	4.34	353	4.75	231	4.86
Self	598	3.64	200	2.69	105	2.21
Medicare gap	411	2.50	218	2.93	157	3.31
Multiple types	92	0.56	92	1.24	72	1.52
Missing/unknown	209	1.27	100	1.35	55	1.16

HMO = health maintenance organization; PPO = preferred provider organization; POS = point of service.

Figure 2. Rates of Chemotherapy Treatment, by Cohort



LIMITATIONS

- Physician charts were not available to confirm OC diagnoses.
- Patients who died or switched insurance plans during the 1-year follow-up period were excluded from the analysis, so our study may be biased towards a population with less severe OC.
- Patients with a cancer diagnosis at another site in the 6 months pre-index were not excluded from the analysis.
 - When patients with a cancer diagnosis at another site in the 6 months pre-index were excluded, the rate of chemotherapy decreased, but the overall trend remained the same (i.e., rates of chemotherapy were 13%, 32%, and 37% for cohorts 1, 2, and 3, respectively).
- Results from this study may not be applicable to Medicaid, Medicare, or uninsured populations.

CONCLUSIONS

- Chemotherapy rates among OC patients varied significantly by the sample selection criteria used.
- Care must be taken to identify the correct patient sample in any retrospective database analysis since the selection criteria affects the appropriateness of the sample, and thus, the study results.

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