Leveraging CMS Medicare data for oncology RWE:
Benefits, limitations, and opportunities, and insights into enrollment patterns

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BACKGROUND

- Medicare data from CMS fully capture vital status and healthcare utilization for nearly all adults in the US aged >= 65, whereas other closed claims sources may be limited to certain health plans.[1]
- The use of high-cost anticancer drugs motivates switching from Medicare MA to FFS [2], which may result in selection bias for studies using only FFS.
- Studying plan churn can inform dataset selection, protocol development, and study design in RWE analyses.

OBJECTIVES

- To explore churn between FFS and MA among Medicare enrollees with lung and breast cancer, myelodysplastic syndrome (MDS), and multiple myeloma
- To highlight the advantages and limitations of CMS data for RWE studies

METHODS

- Used Medicare FFS and MA data (2015-2022) to identify those with newly diagnosed breast cancer, lung cancer, MDS, or multiple myeloma in 2017 and examine churn through 2022
- Defined incident cases were based on diagnosis codes for a cancer in 2017 and no codes for same cancer in the two years prior
- Created Sankey diagrams showing the proportion that switched to FFS or MA and % deceased in 2020 and 2022

FINDINGS

Figure 1. Incident breast cancer churn through Medicare FFS and MA, 2017-2022
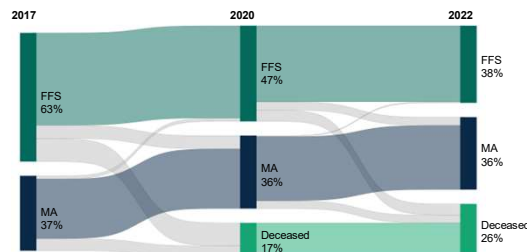

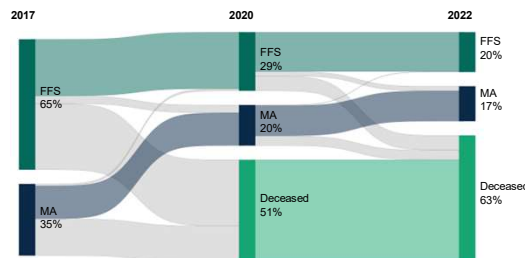Figure 2. Incident lung cancer churn through Medicare FFS and MA, 2017-2022

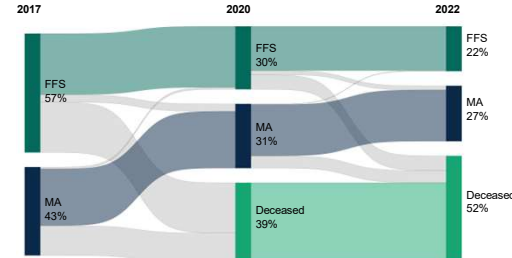Figure 3. Incident MDS churn through Medicare FFS and MA, 2017-2022

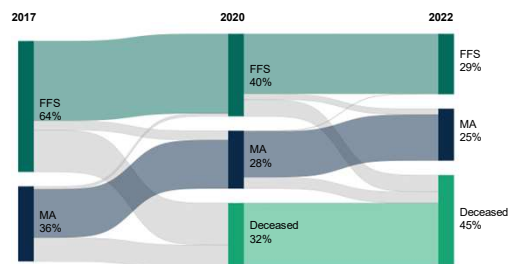Figure 4. Incident multiple myeloma churn through Medicare FFS and MA, 2017-2022

Table 1. New cancer diagnoses in Medicare FFS and MA in 2017

	Breast cancer N (%)	Lung cancer N (%)	MDS N (%)	Multiple myeloma N (%)
Medicare FFS	195,533 (63.2%)	117,324 (64.5%)	20,449 (57.4%)	30,760 (63.6%)
Medicare Advantage	113,934 (36.8%)	64,456 (35.5%)	15,203 (42.6%)	17,630 (36.4%)
Total Medicare	309,467 (100%)	181,780 (100%)	35,652 (100%)	48,390 (100%)

- Among Medicare enrollees newly diagnosed with one of the four cancers, transition from FFS to MA (10% to 17%) was higher than transition from MA to FFS (3% to 6%) over 5 years.
- The highest rate of switching between FFS and MA and vice versa was among those with breast cancer; the lowest rates of switching were for from MA to FFS among those with MDS and from FFS to MA among those with lung cancer.
- Our findings align with the national trend of increasing MA uptake;[3] but, literature shows higher out of pocket spending for lung cancer among MA vs. FFS enrollees, which may incentivize retention in FFS[4]. This, coupled with high transition rates between FFS and MA, suggests selection bias may impact study findings unless 100% Medicare data are used.

TAKEAWAYS & OPPORTUNITIES

- Complete Medicare FFS and MA data can support evidence building for Medicare price negotiation.
- Claims data are best suited for oncology RWE when stage and histology are not essential, e.g., when therapy can be used to proxy for disease severity, as in multiple myeloma.
- Claims-based algorithms can be used to estimate cancer type, metastases, date of diagnosis, and lines of therapy.

Table 2. Comparison of RWD sources for cancer studies

	100% Medicare	SEER-Medicare	Large-scale EMR
Key Strengths	• Complete capture of cost, survival, utilization for nearly all US adults ages 65+ • Minimal loss to follow-up • Short lag for FFS (<4 months)	• Includes stage at diagnosis and histology • Minimal loss to follow-up • Validated diagnosis	• Follows patients across payers • Access to laboratory and imaging results • Some staging information • No data lag
Key Limitations	• No staging except metastases, but can often proxy for severity • Limited histology and radiation dosing information	• 2-year data lag • Limited to 16 states (about 48% of US population)	• Higher loss to follow-up • Limited to certain health systems • May require abstraction or NLP for stage and radiation dosing

Notes: CMS= Centers for Medicare & Medicaid Services; EMR = electronic medical records; FFS = fee-for-service; MA= Medicare Advantage; MDS= Myelodysplastic syndrome; RWD = real-world data; RWE = Real-world evidence.

[1] Julie Barberio, Ashley I Naimi, Rachel E Patzer, Christopher Kim, Rohini K Hernandez, M Alan Brookhart, David Gilbertson, Brian D Bradbury, Timothy L Lash, Influence of incomplete death information on cumulative risk estimates in US claims data, American Journal of Epidemiology, Volume 193, Issue 9, September 2024, Pages 1281–1290, https://doi.org/10.1093/aje/kwae034
[2] Helen M Parsons, Samuel J Greenwald, Stephanie Jarosek, Sayeh Nikpay, Roxanne M Clark, Nathan Shippee, Carrie Henning-Smith, Lindsey Enewold, Switching between medicare advantage and traditional medicare for individuals newly diagnosed with cancer 2015-2019, JNCI: Journal of the National Cancer Institute, 2025;, djaf036, https://doi.org/10.1093/jnci/djaf036
[3] Meredith Freed, Jeannie Folston Bieniek, Anthony Damico, and Tricia Neuman. "Medicare Advantage in 2024: Enrollment Update and Key Trends." https://www.kff.org/medicare/issue-brief/medicare-advantage-in-2024-enrollment-update-and-key-trends/
[4] McGarvey, N., Gitlin, M., Fadil, E. et al. Increased healthcare costs by later stage cancer diagnosis. BMC Health Serv Res 22, 1155 (2022). https://doi.org/10.1186/s12913-022-08457-6

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