Measuring Oral Oncolytic Dose Intensity using Pharmacy Claims Data: a Literature Review

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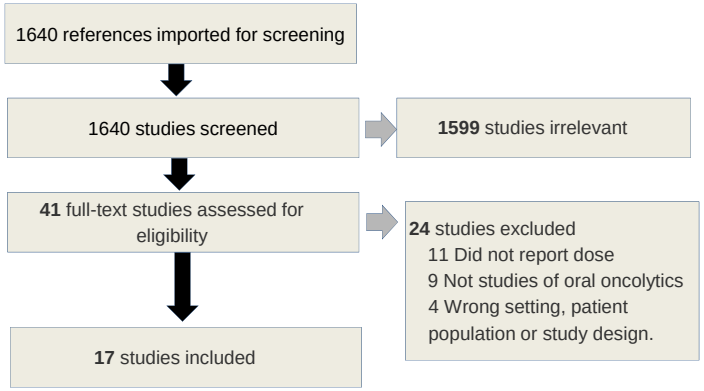
Background

- Administrative claims data are used to study oral oncolytics in the real world, including treatment patterns, safety, comparative effectiveness and economic outcomes.
- As these medications are used more commonly in long-term treatments, studies of medication adherence have also appeared in the literature. While understanding patients' adherence, i.e. whether patients took their medication every day, is an important measure, measures of adherence typically do not also consider dose of medication.
- Adherence studies that focus on refills would be enhanced significantly by including dose because it could reveal that patients who appeared to be adherent were actually taking a very low dose, which would subsequently affect drug effectiveness.
- Dose intensity (DI): the amount of a particular chemotherapeutic agent administered per unit of time.
- Relative dose intensity (RDI): expresses DI as the fraction of the amount recommended.

Objective

- To identify studies that used pharmacy claims data to measure real world oral oncolytic DI, RDI, or similar constructs.

Figure 1. PRISMA diagram of the PubMed search.



Methods

- Two health sciences librarians conducted literature searches using PubMed.
- The search strategy included terms in each of the following concept areas: oncolytics, dosage, and claims (including other types of retrospective data sources such as medical records and registries).
- Three reviewers independently scanned the resulting publications returned from the PubMed search to assess each title/abstract for its relevance.
- Inclusion criteria: retrospective studies that discussed dosing patterns, dose changes, starting dose, RDI or DI of oral oncolytic drug therapy.
- Tags were added to papers that contained one or more of the following concepts: RDI or DI, discontinuation, interruptions, dose change, treatment pattern, adherence, starting dose, and treatment duration.

Results

- Of the 1640 studies returned by the search, 41 were noted as potentially relevant to the research question by three independent reviewers.
- Full-text review of the 41 studies revealed that 17 studies addressed the research question.
- Twenty-four studies were excluded: 11 did not measure dose, nine did not study oral oncolytics, and four were not retrospective studies. (Figure 1)
- Among the 17 articles marked for extraction, three articles reported DI or RDI using electronic health record (EHR) data[1-3], and one article reported DI or RDI using chart review data[4]. (Figure 2)

Figure 2. Tagged concepts among the extracted studies.

Data source for Study	RDI or DI	Discontinuation	Interruption	Dose Change	Treatment Patterns	Adherence (MPR or PDC)	Starting Dose	Treatmen Duration
Chart Review (n=3)	1	1	0	3	2	0	1	0
Claims Data (n=6)	0	3	1	3	4	3	1	2
Electronic Medical Records (n=8)	3	6	2	8	6	0	0	1

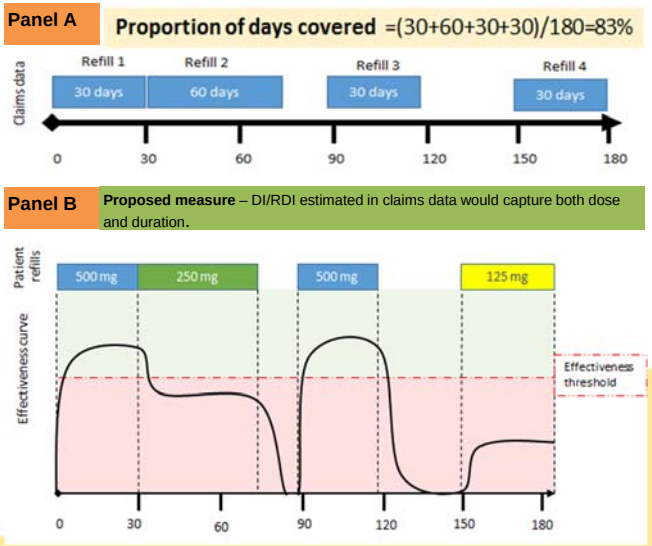
Conclusions

-This literature review reveals not only the need for a measure of dose intensity for oral oncolytics, but also provides a basis for the development of such measures using claims data sources.

Implications

- Adherence studies that include a measure of DI/RDI would more fully characterize exposure by revealing the length of time patients take a daily dose that is lower or higher than the recommended optimal dose, ultimately leading to better estimates of drug effectiveness when those outcomes are linked to adherence. (Figure 3)

Figure 3. Graphical representation of drug exposure captured in claims data. Panel A: the calculated PDC using refill history from claims data. Panel B: the same hypothetical scenario illustrating both dose changes and refills. A patient deemed adherent by traditional measures may be receiving low doses, leading to reduced exposure and potentially reduced drug effectiveness.



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