

Oral Oncolytic Drug Waste Comparison Between Medically Integrated Dispensing and Specialty Pharmacies

S.K. Jackson, PharmD¹; S.W. Champaloux, PhD, MPH¹; P.P. Gleason, PharmD^{1,2}; B.Y. Urick, PharmD, PhD¹. ¹Prime Therapeutics LLC, Eagan, MN, United States; ²University of Minnesota College of Pharmacy, Minneapolis, MN, United States.

BACKGROUND

- Oral oncolytic therapy dose changes are prevalent and typically occur following an oncology appointment or scan, often due to cancer progression or drug toxicity. Waste may be created when doses are changed.
- Physician office medically integrated dispensing (MID) may be associated with less medication waste than specialty pharmacies (SP).¹⁻⁵ MID improves coordination of care through access to the patient's medical chart which may prevent an unnecessary prescription from being dispensed.^{1,2}
- Prior analyses have suggested that MID is associated with millions of dollars in avoided costs and reduced waste as compared to specialty or mail order pharmacies.^{1,3,4}
- Managed care pharmacies may be able to encourage more MID services through provider incentives. Evidence is needed to validate potential savings from MID by comparing this dispensing channel to industry standard dispensing channels.

OBJECTIVE

To assess medication waste associated with dose changes, concurrently comparing MID and SP:

- Frequency of medication waste
- Amount of medication wasted
- Potential cost avoidance

METHODS

- Prime Therapeutics and eight Blue Cross Blue Shield (BCBS) plans implemented oncology practice MID service contracts during 2021 and 2022 for their commercially insured lives.
- Pharmacy claims data from participating BCBS plans were reviewed from July 2021 to November 2022. Claims for a list of 27 oral oncolytic medications dispensed through MID or SP channels were analyzed for dose changes. A member's dose changes were identified using generic product identifier (GPI) information. A subsequent claim for the same medication (i.e., GPI 12) but different unit dose (e.g., tablet strength designated by a different GPI 14) was flagged as a dose change.
- Waste was defined by the difference between days of therapy dispensed prior to dose change and the number of days that had elapsed, yielding the expected supply on hand at the time of dose change.
- Adjustments were made for intentional concurrent therapies.

Outcomes Measures

- Frequency of medication waste:** Dose changes associated with waste (waste events) divided by sum of all dose change events.
- Average wholesale acquisition cost (WAC) of wasted medication per dose change:** Total WAC of wasted medication divided by the number of dose change events.
- Average WAC of wasted medication per waste event:** Total WAC of wasted medication summed divided by the number of waste events.
- Average days of medication therapy wasted per waste event:** Date of dose change, previous fill date, and previous day supply were used to determine days of medication wasted. Days of therapy was divided by number of waste events.

Statistical Analysis

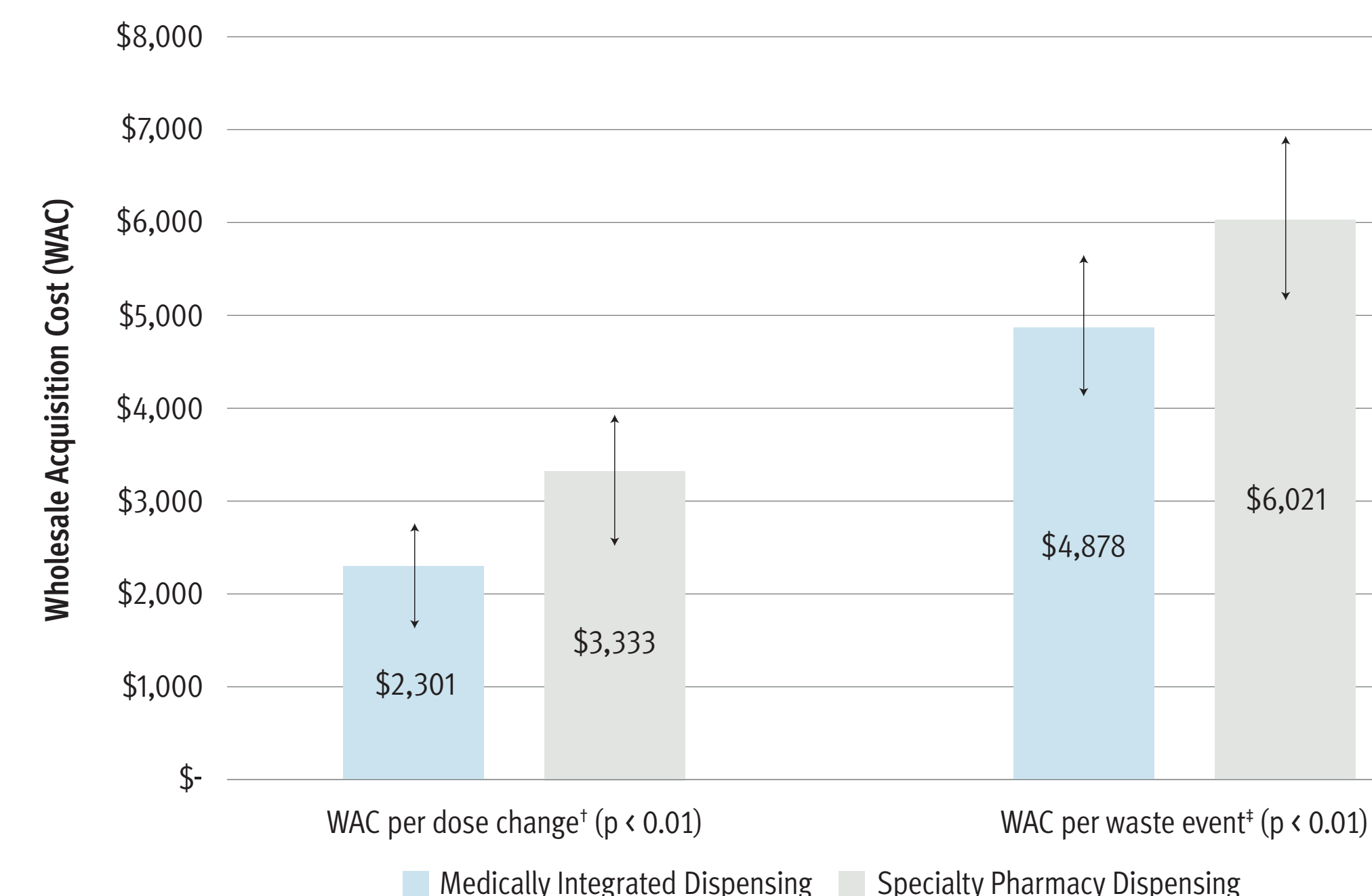
- Chi-square was used to assess the frequency outcome.
- Generalized linear model with a repeated measure for the participating BCBS plans was used to assess differences in spending and days of medication therapy outcomes.

RESULTS

- Across the eight BCBS plans from July 2021 to November 2022, oncology medication therapy waste events were identified for 84 analyzable members utilizing MID and 780 analyzable members utilizing SP.
 - Compared to MID, SP had an absolute 8 percentage point higher rate of dose changes with waste ($p=0.02$) and an additional \$1,032 in wasted medication cost ($p < 0.01$) for each dose change.
- Assessment of dose changes: (Table 1, Figure 1)
 - MID: There were 106 dose changes among 84 members for an average of 1.26 changes per member. 47% of dose changes were associated with waste, with an average of \$2,301 WAC medication wasted per dose change.
 - SP: There were 1,037 dose changes among 780 members for an average of 1.33 dose changes per member. 55% of dose changes were associated with waste, with an average of \$3,333 WAC medication wasted per dose change.
- Assessment of waste events: (Table 2, Figure 1)
 - MID: There were 50 waste events with an average WAC wasted of \$4,878 and 10.0 wasted days of therapy per waste event.
 - SP: There were 574 waste events with an average WAC wasted of \$6,021 and 13.4 wasted days of therapy per waste event.
 - Compared to MID, SP averaged an additional \$1,143 in wasted medication ($p < 0.01$) and 3.4 additional days of medication therapy wasted ($p < 0.01$) for each waste event.

FIGURE 1

Cost comparison of oral oncolytic medication wasted between medically integrated dispensing and specialty pharmacy dispensing among commercially insured lives



† Total WAC of wasted medication divided by the number of dose changes
‡ Total WAC of wasted medication divided by the number of waste events
Whiskers on top of vertical bars represent 95% confidence intervals.

LIMITATIONS

- Claims based data are subject to potential coding errors and typographical errors. Based on claims data, assumptions were made about members' true medication use, adherence and start date.
- This study was limited to a commercial population, and results may not be representative of Medicare or Medicaid populations.
- This study was sensitive to dose changes; medication discontinuations and change in therapy were not captured or assessed.
- Only pharmacy spend and waste were analyzed. Medical spend, total cost of care and indirect costs were not assessed.
- Bias will result if a waste event unit cost difference exists between MID and SP. In this analysis, waste events at MID were associated with higher cost medications: MID and SP waste averaged \$488 and \$449 per day wasted, respectively. The difference negatively impacted the MID savings reported, potentially underestimating MID savings.

CONCLUSIONS

- There is significantly less waste from dose changes occurring at medically integrated dispensing (MID) provider practices compared to specialty pharmacies (SP). This is due to a combination of fewer waste events and fewer days of medication waste per event.
- The superior performance of MID offers the potential to save nearly \$1.1 million if the 1,037 dose changes for 780 SP utilizers had occurred at MID (1,037 dose changes X \$1,032 savings per dose change).
- These real-world findings are consistent with previous analyses comparing MID and SP waste due to dose changes, and they support the continued efforts to encourage MID use.
- As more insurers adopt MID, additional research should be conducted to validate these findings.

TABLE 1

Medication waste frequency and average wholesale acquisition cost (WAC) wasted per dose change

	Medically Integrated Dispensing	Specialty Pharmacy Dispensing	Difference p value
Dose changes*	106	1,037	Not Applicable
Frequency of waste† by dose change (95% confidence limits)	47% (41% – 54%)	55% (51% – 60%)	8% $p = 0.02$
Average WAC wasted per dose change‡ (95% confidence limits)	\$2,301 (\$1,802 – \$2,938)	\$3,333 (\$2,707 – \$4,103)	\$1,032 $p < 0.01$

* Dose changes were identified among 27 oral oncology medications using the member's medication claim generic product identifier (GPI) information.
† Waste was defined by a difference between days of therapy dispensed prior to dose change and the number of days that had elapsed, indicating excess supply on hand at the time of dose change.
‡ Total WAC of wasted medication divided by the number of dose changes.

TABLE 2

Average wholesale acquisition cost (WAC) of wasted medication and days of therapy wasted per waste event

	Medically Integrated Dispensing	Specialty Pharmacy Dispensing	Difference p value
Dose changes* associated with waste	50	574	Not Applicable
Average WAC wasted per waste event† (95% confidence limits)	\$4,878 (\$4,174 – \$5,701)	\$6,021 (\$5,215 – \$6,952)	\$1,143 $p < 0.01$
Average days of therapy wasted per waste event‡ (95% confidence limits)	10.0 days (8.5 – 11.8)	13.4 days (11.8 – 15.3)	3.4 days $p < 0.01$

* Dose changes were identified among 27 oral oncology medications using the member's medication claim generic product identifier (GPI) information.
† Total WAC of wasted medication divided by the number of waste events.
‡ Waste was defined by the difference between days of therapy dispensed prior to dose change and the number of days that had elapsed, yielding the expected supply on hand at the time of dose change.

REFERENCES

- Nubla J, Egerton NJ. Cost avoidance through the medically integrated dispensary for oral chemotherapy: Utilizing the NCODA cost avoidance and waste tracker. *J Clin Oncol*. 2018 June;36(15). https://doi.org/10.1200/JCO.2018.36.15_suppl.e18916.
- Kanter GP, Parikh RB, Fisch MJ, et al. Trends in medically integrated dispensing among oncology practices. *JCO Oncology Practice*. 2022 July;18(10). <https://doi.org/10.1200/OP.22.00136>.
- Darling JO, Starkey AJ, Nubla JJ, et al. Financial impact of medically integrated pharmacy interventions on oral oncolytic prescriptions. *JCO Oncology Practice*. 2022 May;18(7). <https://doi.org/10.1200/OP.22.00022>.
- Leach JW, Eckwright D, Champaloux SW, et al. Medically integrated dispensing (MID) clinical and cost outcomes compared to specialty pharmacies (SP). *J Clin Oncol*. 2022;40(16_suppl). https://doi.org/10.1200/JCO.2022.40.16_suppl.e18645.
- Dillmon MS, Kennedy EB, Reff M. Patient-centered medically integrated dispensing: ASCO/NCODA standards summary. *JCO Oncology Practice*. 2020;16(6):344-347. <https://doi.org/10.1200/OP.19.00668>.