The Impact of Patient Characteristics and Social Drivers of Health Factors on Oral Oncolytic Adherence

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Background

Current Landscape of Oral Oncolytics

- 25-35% of all current oncolytics are designed for oral use
- Oral oncolytics are available to treat most cancer types[1,2]

Oral Medication vs. Traditional IV Medication

Advantages	Challenges
Convenient	Financial cost
Patient autonomy	Less contact with treatment providers
Quality of life	**Adherence**

- The extent of adherence to oral oncolytics varies from 16 – 100%, depending on the cancer type, method used to measure nonadherence, and patient settings[3]

Social Determinants of Health (SDOH) Factors are Known to Impact Medication Adherence

- SDOH are the non-medical factors that influence health outcome - conditions in which people are born, grown, work, live, and age[4]
- Multiple studies have shown that various SDOH factors are associated with medication adherence across multiple chronic conditions (e.g., diabetes, hypertension, asthma) and cancer [3,5,6,7]

Objectives

Part 1: Identify patient characteristics and SDOH factors associated with secondary oral oncolytic nonadherence

Part 2: Assess what SDOH barriers and patient characteristics are associated with primary oral oncolytic nonadherence

Part 1 Study Design

Study Population:	• Adults 18+ who received at least 2 fills of an oral oncolytic between May 2022 and April 2023 • Final cohort: N = 1,128 prescriptions, n = 979 patients
Data Collected:	• Patient characteristics (pulled from electronic records) • Age, gender, race/ethnicity, marital status, occupation, language and if interpreter needed, insurance type, smoking history, body mass index (BMI), population density, median household income, geographic code • Proportion of days covered (PDC) = $\left(\frac{days\ covered\ in\ observation\ period}{number\ of\ days\ in\ observation\ period}\right) \times 100$
Analysis:	• Multivariable mixed-effect logistic regression

Part 2 Study Design

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Study Population:	• Adults 18+ who were prescribed a new oral oncolytic between November 2023 and January 2024 • Final cohort: N=340 patients who answered the SDOH assessment and N = 176 patients who did not answer the SDOH assessment
Data Collected:	• Primary oral oncolytic nonadherence (if a new prescription has not been filled within 30 days) • Patient characteristics & additional SDOH assessment
Analysis:	• Logistic regression

Part 1

Results:

Table 1: Multivariable mixed-effect logistic regression examining the associations between patient characteristics and oral oncolytic nonadherence

Characteristics	Nonadherence Rate (%)	Multivariable Mixed-Effect Logistic Regression		
		Odds Ratio	95% CI	P Value
Age				
Below 65	96 / 376 (26%)	Ref		
65 and Older	194 / 752 (26%)	0.93	0.56, 1.54	0.8
Gender				
Female	149 / 575 (26%)	Ref		
Male	141 / 553 (25%)	1.01	0.71, 1.44	>0.9
Race/Ethnicity				
White	133 / 531 (25%)	Ref		
Black	7 / 26 (27%)	0.88	0.27, 2.80	0.8
Hispanic/Latino	52 / 189 (28%)	1.58	0.90, 2.77	0.11
Asian	68 / 267 (25%)	1.03	0.64, 1.65	0.9
Other	25 / 95 (26%)	1.12	0.59, 2.14	0.7
Unknown	5 / 20 (25%)	1.11	0.32, 3.92	0.9
Marital Status				
Married/Life Partner	187 / 750 (25%)	Ref		
Not Married/Life Partner	103 / 378 (27%)	1.08	0.75, 1.56	0.7
Occupation				
Employed	51 / 188 (27%)	Ref		
Non-Employed	156 / 613 (25%)	0.92	0.55, 1.52	0.7
Not Recorded	83 / 327 (25%)	0.98	0.57, 1.68	>0.9
Language and Interpreter				
English	237 / 886 (27%)	Ref		
Non-English without Interpretation	2 / 23 (8.7%)	0.19	0.04, 1.00	0.050
Non-English with Interpretation	51 / 219 (23%)	0.67	0.39, 1.13	0.13

Characteristics	Nonadherence Rate (%)	Multivariable Mixed-Effect Logistic Regression		
		Odds Ratio	95% CI	P Value
Insurance				
Private	43 / 175 (25%)	Ref		
Medicaid	42 / 175 (24%)	0.94	0.48, 1.85	0.9
Medicare	186 / 711 (26%)	1.21	0.65, 2.24	0.6
Other	3 / 9 (33%)	1.32	0.22, 7.83	0.8
Not Recorded	16 / 58 (28%)	1.28	0.55, 2.98	0.6
Smoking				
Never Smoked	197 / 771 (26%)	Ref		
Former Smoker	85 / 336 (25%)	1.05	0.72, 1.53	0.8
Smoker	8 / 17 (47%)	3.95	1.07, 14.6	0.040
BMI				
18.5 - 24.9 (Healthy Weight)	126 / 444 (28%)	Ref		
25.0 - 29.9 (Overweight)	109 / 403 (27%)	0.81	0.55, 1.20	0.3
30 or Higher (Obese)	42 / 234 (18%)	0.41	0.24, 0.69	<0.001
Below 18.5 (Underweight)	12 / 42 (29%)	1.11	0.47, 2.65	0.8
Geographic Code				
Metropolitan Area	276 / 1,049 (26%)	Ref		
Other (Micropolitan + Rural + Small Town)	14 / 79 (18%)	0.48	0.22, 1.04	0.062
Population Density				
< 1,200	86 / 355 (24%)	Ref		
≥ 5,700	97 / 393 (25%)	0.89	0.56, 1.41	0.6
1,200 – 5,700	105 / 372 (28%)	1.21	0.78, 1.89	0.4
Median Household Income				
< 96,000	184 / 687 (27%)	Ref		
≥ 120,000	50 / 195 (26%)	0.76	0.47, 1.24	0.3
96,000 - 120,000	54 / 238 (23%)	0.82	0.53, 1.28	0.4

Figure 2: Forest plots of patient characteristics that showed significant or trending associations with oral oncolytic nonadherence
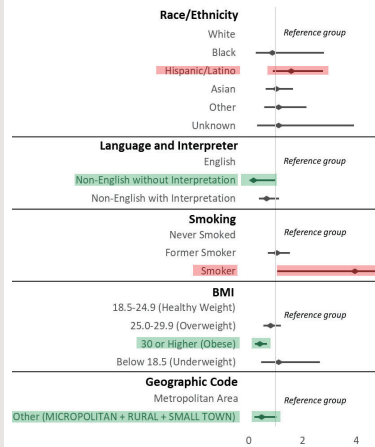
Results:

- **73.75%** of SHC specialty pharmacy patients were adherent to their oral oncolytic(s)
- Smokers had **3.95 higher odds** of nonadherence compared to nonsmokers
- Obese patients had **0.59 lower odds** of nonadherence compared to normal weight patients

Trends:

- Patients who identified as **Hispanic/Latino trend towards having higher odds of nonadherence** when compared to patients who identified as white
- Patients who live within a **micropolitan, rural, or small town had a strong trend towards lower odds of nonadherence** compared to patients who lived in a metropolitan area
- Patients whose **primary language is not English and did not request an interpreter have lowers odds of nonadherence** compared to patients who identified English as their primary language

Part 2

SDOH Assessment:	Patients were retrospectively contacted via phone and asked to participate by answering the following questions: 1. In the past year, have you or any family members you live with been unable to get any **food, utilities, childcare, medicine, or any health care** (medical, dental, mental health, vision) when it was needed? - If the answer to 1 is yes, then list the element 2. What **language** are you most comfortable speaking? 3. How often do you feel confident about **reading and managing your prescription**? 4. In the past 12 months, has lack of **reliable transportation** kept you from medical appointment, meetings, work, or from getting things needed for daily living? 5. If required, do you have **access to assistance** from friends, family, or other individuals to manage your oral medication regimen?

Table 2: Logistic regression examining the association between patient characteristics and the presence of any SDOH barrier
(Full table in supplemental information)

Characteristic	Odds Ratio	95% CI	P Value
Age			
Below 65	Ref		
65 and Older	0.82	0.38, 1.81	0.6
Gender			
Female	Ref		
Male	1.37	0.81, 2.32	0.2
Race/Ethnicity			
White	Ref		
Asian	0.62	0.33, 1.17	0.14
Hispanic/Latino	1.06	0.40, 2.89	>0.9
Other/Not Recorded	0.77	0.33, 1.85	0.6
Marital Status			
Married/Life Partner	Ref		
Not Married/Life Partner	0.99	0.57, 1.72	>0.9
Occupation			
Employed	Ref		
Non-Employed	1.22	0.60, 2.45	0.6
Not Recorded	0.94	0.48, 1.84	0.9
Language			
English	Ref		
Non-English	25.9	3.59, 581	0.007
Interpreter Needed			
Yes	Ref		
No	3.76	0.49, 80.3	0.3

Table 3: Logistic regression examining the association between SDOH barriers and primary medication adherence

Overall Survey Responses					
	Adherence Rate		Unadjusted Association		
	n	%	OR	95% CI	P Value
SDOH Barrier	109/135	80.74%	—		
No SDOH Barrier	70/78	89.74%	2.09	0.93, 5.17	0.089

Table 4: Logistic regression examining the association between specific SDOH barriers and primary medication adherence

	Adherence Rate		Unadjusted Association		
	n	%	OR	95% CI	P Value
Q1: Access to Goods and Services					
SDOH Barrier	18/23	78.26%	Ref		
No SDOH Barrier	161/190	84.74%	1.54	0.48, 4.22	0.4
Q2: Language					
SDOH Barrier	42/49	85.71%	Ref		
No SDOH Barrier	137/164	83.54%	0.85	0.32, 1.99	0.7
Q3: Health Literacy					
SDOH Barrier	57/74	77.03%	Ref		
No SDOH Barrier	122/139	87.77%	2.14	1.02, 4.52	0.044
Q4: Transportation					
SDOH Barrier	24/25	96.00%	Ref		
No SDOH Barrier	154/187	82.35%	0.19	0.01, 0.97	0.11
Q5: Support					
SDOH Barrier	46/57	80.70%	Ref		
No SDOH Barrier	131/154	85.06%	1.36	0.60, 2.96	0.4

Results:

- **Non-English primary language** was associated with an almost **26 higher odds** of reporting an SDOH barrier
- Patients that identified **no SDOH barriers** had a strong trend of **2.09 higher odds** of primary medication adherence
- Patients that specifically identified **no SDOH barriers in health literacy** had a **2.14 higher odds** of primary medication adherence

Conclusion

Medication adherence in oncology is critical for maximizing treatment effectiveness, controlling cancer progression, improving outcomes, managing side effects, reducing costs, and empowering patients throughout their cancer journey. A better understanding of the SDOH factors associated with medication adherence, such as smoking and health literacy, can better inform healthcare workers and identify points of intervention.

Acknowledgements

Supplemental Information and References (QR Code)

Questions? SHaidar@stanfordhealthcare.org