



**Northwestern Medicine**<sup>®</sup>  
Feinberg School of Medicine

# Psychosocial Disparities Among Cancer Survivors

Betina Yanez, Ph.D.  
Associate Professor  
Northwestern University Feinberg School of Medicine  
Director of Patient Engagement, Cancer Survivorship Institute  
Cancer Control and Survivorship Program Co-Lead  
Robert H. Lurie Comprehensive Cancer Center



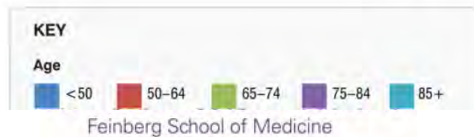
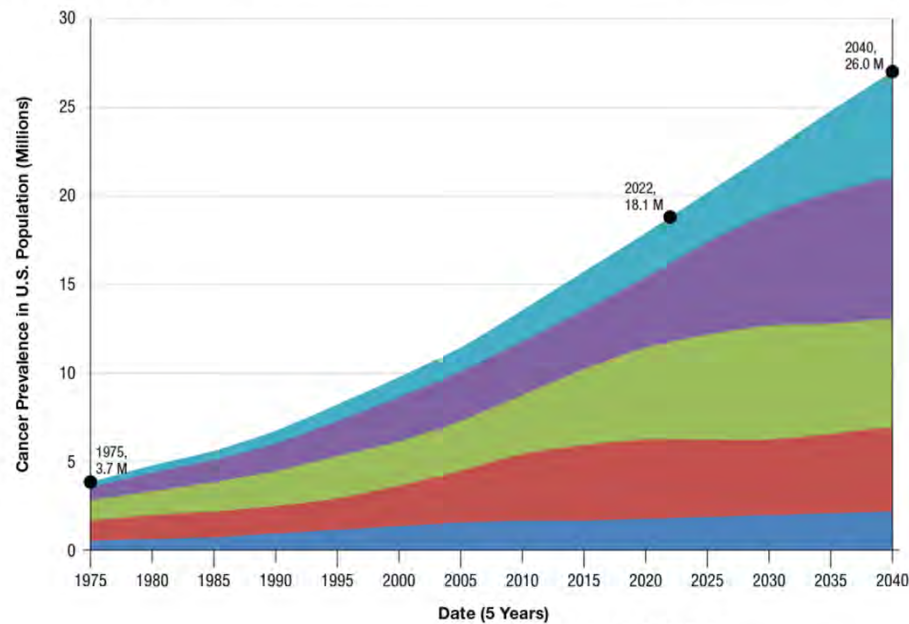


# COI

- Consultant for Mayo Clinic

# Growing Number of Cancer Survivors

**Cancer Prevalence and Projections in U.S. Population from 1975–2040**



**REFERENCES**  
Bluethmann SM, Mariotto AB, Rowland JH. Anticipating the "Silver Tsunami": Prevalence Trajectories and Comorbidity Burden among Older Cancer Survivors in the United States. *Cancer Epidemiol Biomarkers Prev.* 2016 Jul;25(7):1029-36

The number of cancer survivors in the United States continues to increase.

Survivorship is a growing area of importance.

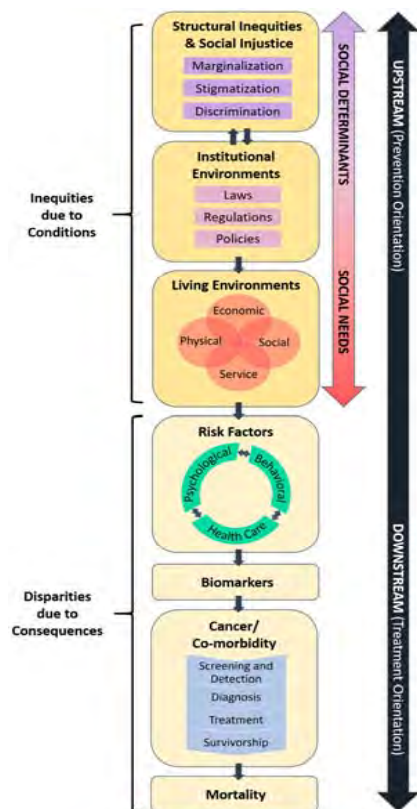
Despite improvements in cancer screening and treatments, not all patients are benefitting equally.

Figure from NCI Cancer Control Website  
<https://cancercontrol.cancer.gov/ocs/statistics>

## Inequities in Cancer

- Racial and ethnic minorities and other medically underserved groups diagnosed with cancer often experience
  - poorer health-related quality of life
  - greater financial burden
  - poorer clinical outcomes
- Understanding the causes of these disparities and intervening to reduce disparities and improve outcomes for all is critical to cancer survivorship research
  - What is the relationship between social determinants of health (SDOH) and clinical and patient-reported outcomes?

# Social Determinants of Health Matter



## • Patient-Reported Outcomes

- Low care satisfaction
- High levels of unmet cancer-related needs
- Poorer health-related quality of life

## • Sociocultural Factors

- Language
- Immigration concerns
- Illness beliefs and stigma about disease
- Family concerns
- Racism

## • Financial & Structural Factors

- Insurance
- Access to care
  - Time off work
  - Lodging
  - Transportation

CA A Cancer J Clinicians, Volume: 70, Issue: 1, Pages: 31-46, First published: 29 October 2019, DOI: (10.3322/caac.21586)

## A Recent Example from the Literature Highlighting SDOH

- Highlight a recent article focusing on disparities.
- What is the association between individual and structural SDOH and disparities in clinical outcomes among women diagnosed with breast cancer?
- Post hoc analysis of a randomized clinical trial that included 9,719 racially diverse women with breast cancer to evaluate disparities.



## Breast Cancer Disparities

Individual insurance and neighborhood deprivation independently correlated with overall survival.

Black women experienced shorter relapse-free intervals and overall survival compared with White women.

JAMA Oncol. 2022;8(4):579-586.  
doi:10.1001/jamaoncol.2021.7656

**Table 1. Estimated Hazard Ratios for Relapse-Free Interval From a Multivariate Model**

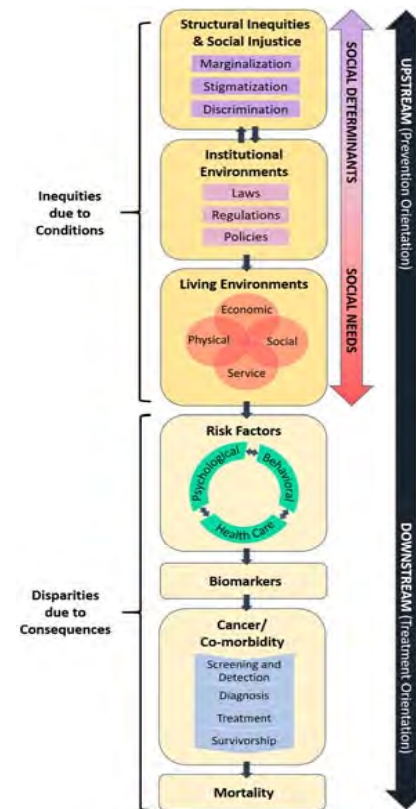
Variable	Hazard ratio (95% CI)	P value
Age, y		
≤40	1 [Reference]	
41-50	0.47 (0.35-0.65)	<.001
51-60	0.35 (0.26-0.48)	<.001
61-70	0.44 (0.32-0.62)	<.001
≥71	0.46 (0.28-0.75)	.002
Race <sup>a</sup>		
Asian	1.02 (0.67-1.56)	.92
Black	1.39 (1.05-1.84)	.02
White	1 [Reference]	
Unknown or not reported	0.71 (0.43-1.17)	.18
Insurance type <sup>b</sup>		
Private	1 [Reference]	
Medicare	0.90 (0.66-1.24)	.52
Medicaid	0.91 (0.62-1.35)	.64
None	1.05 (0.65-1.70)	.83
International participants	0.82 (0.41-1.64)	.57
Other or unknown	1.30 (0.71-2.38)	.40
Neighborhood Deprivation Index		
Quartile 1, lowest deprivation	1 [Reference]	
Quartile 2	1.11 (0.85-1.46)	.44
Quartile 3	1.06 (0.81-1.40)	.65
Quartile 4, highest deprivation	1.03 (0.79-1.36)	.81
Unknown	1.24 (0.62-2.45)	.54
Tumor size in the largest dimension, cm		
≤2	1 [Reference]	
>2	2.08 (1.75-2.48)	<.001
Histologic grade of tumor		
Low	1 [Reference]	
Intermediate	1.65 (1.29-2.12)	<.001
High	2.11 (1.57-2.83)	<.001
Unknown	2.45 (1.52-3.94)	.002
Early discontinuation of endocrine therapy <sup>c</sup>	1.05 (0.73-1.51)	.80
No endocrine therapy	2.12 (1.21-3.73)	.009
Breast cancer recurrence test score <sup>d</sup>	NA	<.001

**Table 2. Estimated Hazard Ratios for Overall Survival From a Multivariate Model**

Variable	Hazard ratio (95% CI)	P value
Age, y		
≤40	1 [Reference]	
41-50	0.94 (0.53-1.66)	.84
51-60	1.07 (0.62-1.86)	.81
61-70	2.20 (1.27-3.82)	.005
≥71	3.31 (1.81-6.05)	<.001
Race <sup>a</sup>		
Asian	0.65 (0.35-1.23)	.19
Black	1.49 (1.10-2.00)	.009
White	1 [Reference]	
Other or unknown	0.71 (0.40-1.27)	.25
Insurance type <sup>b</sup>		
Private	1 [Reference]	
Medicare	1.30 (1.01-1.68)	.04
Medicaid	1.44 (1.01-2.05)	.05
None	1.09 (0.66-1.82)	.73
International participants	0.80 (0.38-1.69)	.56
Other or unknown	0.73 (0.30-1.77)	.48
Neighborhood Deprivation Index		
Quartile 1, lowest deprivation	1 [Reference]	
Quartile 2	1.17 (0.88-1.57)	.28
Quartile 3	1.24 (0.93-1.66)	.15
Quartile 4, highest deprivation	1.34 (1.01-1.77)	.04
Unknown	1.19 (0.58-2.48)	.63
Tumor size in the largest dimension, cm		
≤2	1 [Reference]	
>2	1.65 (1.37-1.98)	<.001
Histologic grade of tumor		
Low	1 [Reference]	
Intermediate	1.15 (0.92-1.45)	.23
High	1.37 (1.02-1.82)	.03
Unknown	1.94 (1.24-3.04)	.004
Early discontinuation of endocrine therapy <sup>c</sup>	2.80 (2.22-3.54)	<.001
No endocrine therapy	2.38 (1.39-4.08)	.002
Breast cancer recurrence test score <sup>d</sup>	NA	<.001

## A Recent Example from the Literature Highlighting SDOH

- The association between neighborhood and overall mortality among patients with breast cancer is likely multifactorial.
- Data collection of SDOH can enhance our understanding of the causes of disparities, but these data are often lacking.



CA A Cancer J Clinicians, Volume: 70, Issue: 1, Pages: 31-46, First published: 29 October 2019, DOI: (10.3322/caac.21586)



## How Are We Intervening?

- Interventions to improve outcomes among medically underserved patients diagnosed with cancer
- Targeting modifiable factors to improve outcomes and reduce inequities
- Ongoing studies integrated into our healthcare system

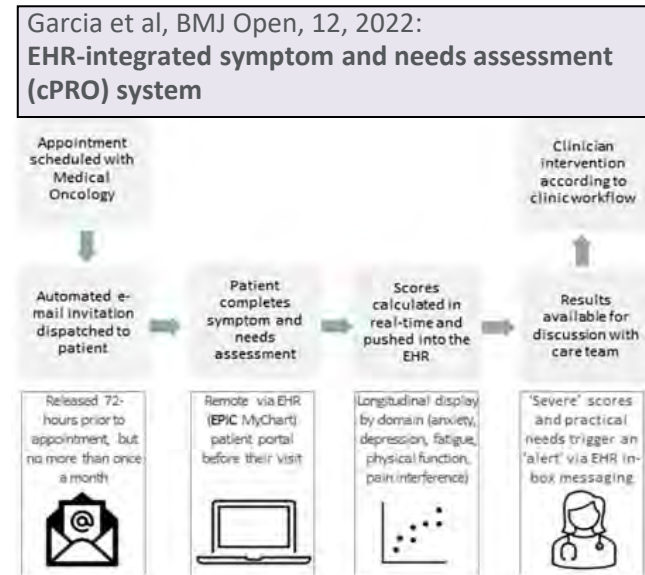
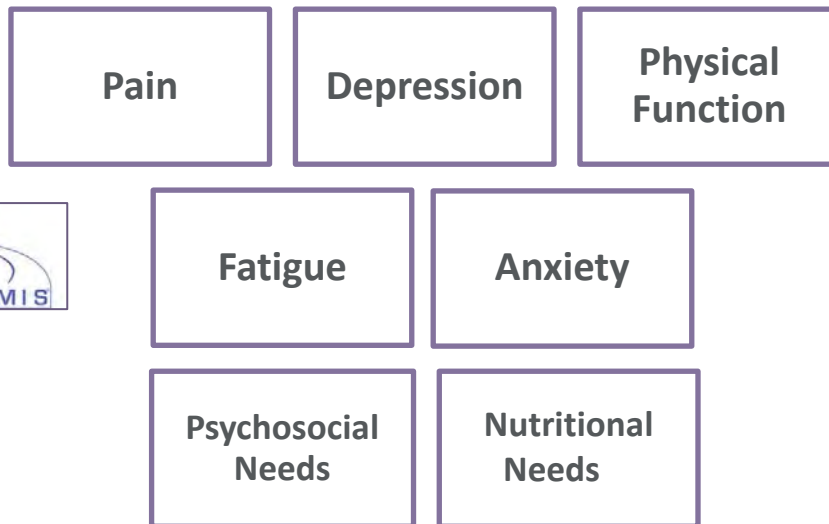




## Integrating interventions into healthcare systems via the patient portal

# Use of Patient-Reported Outcomes to Improve Care at Northwestern Medicine Lurie Cancer Center

Standard of Care: Patient-reported outcomes are completed once a month and integrated into the electronic health record (distress screening). Severe scores trigger clinical alerts. Patients who trigger depression and anxiety alerts are triaged to supportive oncology.

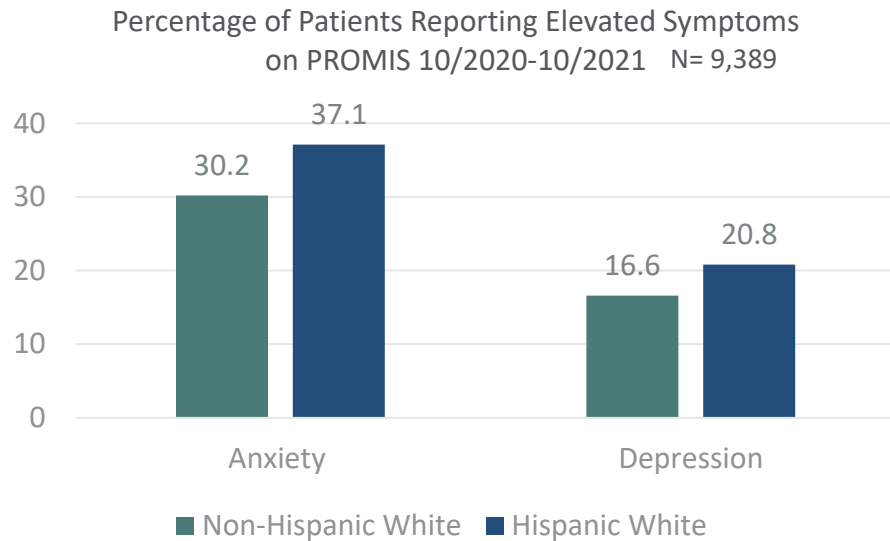


## Use of Patient-Reported Outcomes to Improve Care at Northwestern Medicine Lurie Cancer Center

- What are the characteristics of patients with elevated PRO scores?
  - Clinical quality improvement initiative at the NM Lurie Cancer Center
  - Sample of 3,521 patients
- Patients who triggered clinical alerts at their first assessment were
  - younger in age (56.62 years vs 58.20 years)
  - recently diagnosed (2.22 years vs 3.35 years)
  - more likely to be
    - Hispanic/Latinx (4.71% vs 2.78%) than White
    - Black (8.82% vs 3.37%) than White
    - other race (7.28% vs 3.96%) than White



# Background: Prevalence of Hispanic/Latinx Elevated Depressive Symptoms



- In well-resourced cancer centers: 1 full-time psychologist to every 2,523 newly registered patients every year in NCCN centers
- Depression impacts quality of life and is associated with reduced early discontinuation of cancer treatment

**JAMA Oncology | Original Investigation**  
**Association of Modifiable Risk Factors With Early Discontinuation of Adjuvant Endocrine Therapy**  
 A Post Hoc Analysis of a Randomized Clinical Trial

Betina Yanez, PhD, Robert J. Gray, PhD, Joseph A. Sparano, MD, Ruth C. Carlos, MD, Gelareh Sadigh, MD, Sofia F. Garcia, PhD, Ilana F. Gareen, PhD, Timothy J. Whelan, MD, George W. Sledge, MD, David Cella, PhD, Lynne I. Wagner, PhD

<https://usafacts.org/articles/over-one-third-of-americans-live-in-areas-lacking-mental-health-professionals>  
 Melton et al., 2020 in JCO Oncology Practice

# Integrated Bilingual Psychosocial Care for Cancer-Related Distress

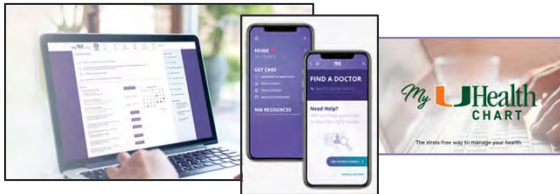
- Linking depressive symptom screening from the EHR to inform digital health interventions
- A new digital intervention to improve depressive symptoms among Spanish and English-speaking cancer patients and survivors
- Evaluate implementation of intervention across 2 healthcare systems
  - Evaluating referral rates by **clinicians** through an EPIC referral and after visit summary
  - Evaluating the use of **MyChart** patient portal as a form of study entry

Evaluation of enrollment pathway

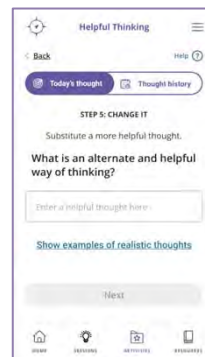


Provider Initiated Referral

Patient Initiated Study Entry from Patient Portal MyChart



**M Northwestern Medicine**  
Feinberg School of Medicine



Yanez et al., in Contemporary Clinical Trials, 2023

# My Wellbeing Guide and Cognitive Behavioral Stress Management

Weekly Video Sessions Paired with Relaxation

Week 1: Thoughts, feelings & behaviors

Week 2: Cognitive distortions

Week 3: Cognitive restructuring

Week 4: Enhancing coping skills

Week 5: Communication skills

Week 6: Social support

Week 7: HRQoL and wrap up

## Interactive Features

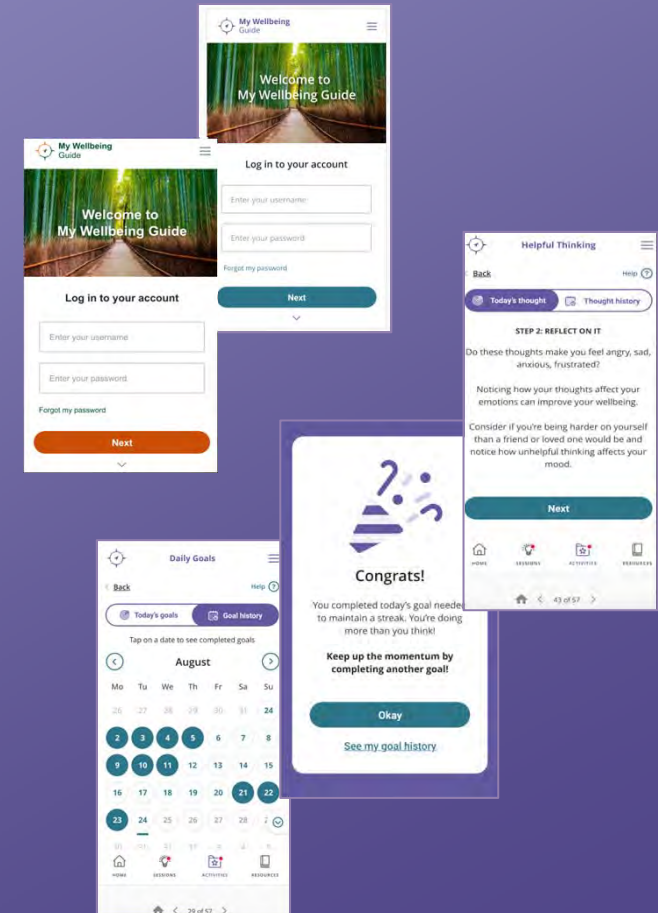
Self care goals  
Helpful thinking  
Coping coach

## Guided Relaxation Activities

Deep breathing  
Progressive muscle relaxation  
Guided imagery

## Symptom Management Articles

Dealing with common cancer symptoms  
Tips for coping with cancer



# Evaluating the Implementation of Evidence-Based Interventions

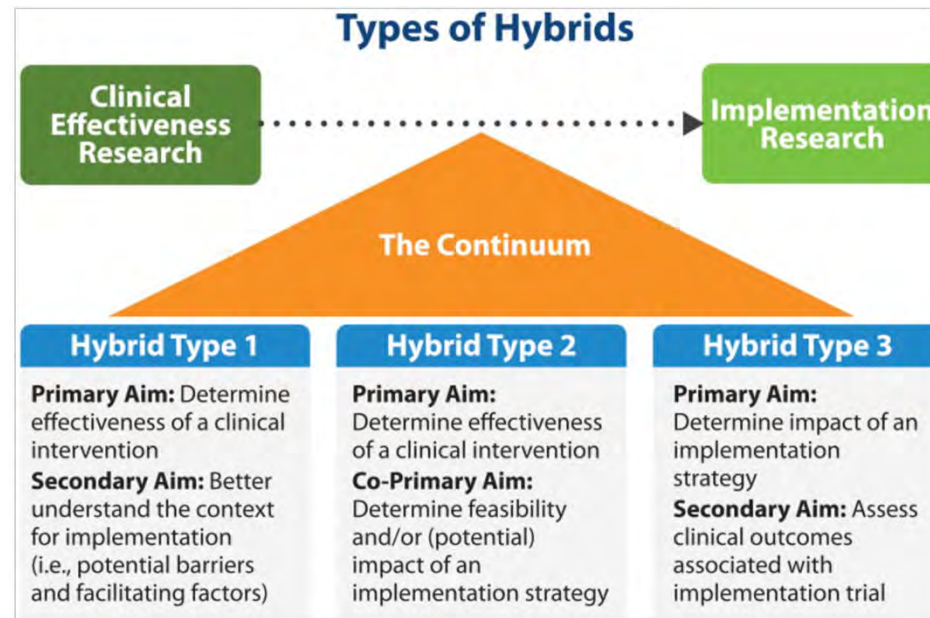


Figure 19 Examples of Evaluation Aims by Hybrid Effectiveness-Implementation Design Type

Adapted from: Curran, Bauer, Mittman et al. 2012 Med Care.

From: [Evaluation and Study Designs for Implementation and Quality Improvement](#)



# Implementation Evaluation Guided by RE-AIM Framework

## Assessing Equity in the Reach of the Intervention

Number and representativeness of patients who consent to My Wellbeing Guide

Proportion and representativeness of patients who enroll in My Wellbeing Guide from the patient-facing portal

Proportion and representativeness of patients who enroll in My Wellbeing Guide from study flyer or staff outreach

Proportion and representativeness of patients who enroll in My Wellbeing Guide from clinician-initiated referrals

Number and representativeness of clinician-initiated referrals to My Wellbeing Guide via EHR

## Evaluating Barriers and Facilitators to Implementation

- Are assessments and interventions linked to the patient portal reaching all patients?
- Patient portal is an online tool for accessing health information and care
  - Are there disparities in patient portal use?
  - What are individual-level and patient-level factors associated with patient portal access and persistence of patient portal use?

## Disparities in EHR Patient Portal Access and Use Study

- Oncology patients from
  - Northwestern Medicine
  - Mayo Clinic
  - Symptom Management Implementation of Patient Reported Outcomes in Oncology (SIMPRO) representing 6 distinct health systems including
  - 28,942 cancer patients
- Portal use extraction occurred in winter of 2022 and assembled by Research Triangle Institute
- Logistic regression models tested associations of SDOH with 2 outcomes
  - portal access (ever access/never accessed)
  - persistence of portal use (accessed the portal  $\leq 20$  weeks vs.  $\geq 21$  weeks in the 35-week study period)

## Results: Disparities in Initial Patient Portal Access

Racial/ethnic minority, rural dwelling, not working, and limited broadband access were associated with lower odds of portal access.

There were fewer disparities with portal persistence.

Using multiple modalities for portal access was associated with persistent portal use.

Patient-, structural-level and research center factors (N= 28,942)	Did not access portal (N=10,061)	Accessed portal at least once (N= 18,881)	Overall p-value	Adjusted Odds Ratio (95% CI)
	N (%)	N (%)		
<b>Patient-level characteristics</b>				
<b>Age</b>			<.0001	
18-<40 years	331 (3.3%)	1,159 (6.1%)		2.56 (2.21-2.98)***
40-65 years	3,276 (32.6%)	8,658 (45.9%)		1.81(1.68-1.97)***
>65 years	6,454 (64.1%)	9,064 (48.0%)		Ref.
<b>Employment</b>			<.0001	
Employed	2,312 (23.0%)	7,542 (39.9%)		Ref.
Not working for pay/ Other	1,607 (16.0%)	2,506 (13.3%)		0.41 (0.38-0.45)***
Retired	6,142 (61.0%)	8,833 (46.8%)		0.64 (0.59-0.7)***
<b>Ethnic identification</b>			0.003	
Hispanic/Latine	196 (1.9%)	299 (1.6%)		0.72 (0.59-0.9)*
Non-Hispanic/Latine	9,865 (98.1%)	18,582 (98.4%)		Ref.
<b>Gender identification</b>			<.0001	
Female	5,781 (57.5%)	11,722 (62.1%)		Ref.
Male	4,290 (42.5%)	7,159 (37.9%)		0.85 (0.8- 0.89)***
<b>Racial identification</b>			<.0001	
White	9,403 (93.5%)	18,012 (95.4%)		Ref.
Asian	128 (1.3%)	270 (1.4%)		0.82 (0.65-1.03)
Black/African American	332 (3.3%)	359 (1.9%)		0.38 (0.32-0.44)***
Other	198 (2.0%)	240 (1.3%)		0.55 (0.44-0.68)***
<b>Structural-level characteristics</b>				
<b>Broadband access</b>			<.0001	
<85% of neighborhood	6,843 (68.0%)	10,396 (55.1%)		0.72 (0.67-0.76)***
> 85% of neighborhood	3,218 (32.0%)	8,485 (44.9%)		Ref.
<b>Residence</b>			0.01	
Metropolitan/Urban	4,984 (49.5%)	11,381 (60.3%)		Ref.
Micropolitan/Large rural	1,989 (19.8%)	3,138 (16.6%)		0.97 (0.9-1.04)
Small town/Small rural/ Rural	3,088 (30.7%)	4,362 (23.1%)		0.9 (0.84-0.97)*

# Future Directions



## Financial Burden as a Social Determinant of Health

Cancer is among one of the most expensive diseases to treat.

Even with insurance, cancer survivors are at risk of experiencing considerable financial burden due to high deductibles and out-of-pocket maximums.

There is limited data on the role of modifiable factors in predicting financial burden.

# Improving Health Insurance Literacy

## Health Insurance Literacy Primer (HELP)

### Study Aims:

1. Pilot the acceptability and feasibility of the HELP video for patients that report financial burden and/or low health literacy.
2. Evaluate the effectiveness of the intervention on health insurance literacy.



## Conclusions

- Social determinants of health are a critical aspect of understanding cancer survivorship disparities
- Reducing disparities requires a multifaceted approach
  - Enhanced data collection of SDOH
  - Targeting modifiable factors (e.g., depressive symptoms)
  - Equitable implementation of psychosocial care



# Acknowledgments

## **Northwestern University**

Michael Bass, MS  
Diana Buitrago, MPH  
Dave Cella, PhD  
Devin Peipert, PhD  
Sofia Garcia, PhD  
Sheetal Kircher, MD  
Christine Rini, PhD  
Melissa Simon, MD  
Chloe Taub, PhD

## **University of California, Irvine**

Stephen Schueller, PhD

## **University of Miami**

Michael Antoni, PhD  
Frank Penedo, PhD  
Carmen Calfa, MD  
Carlos Silvera, BA  
Madeline Krause, BA

## **University of Utah**

Justin Dean Smith, PhD

## **University of Illinois at Chicago**

Jennifer Duffecy, PhD



**M Northwestern Medicine**<sup>®</sup>  
Feinberg School of Medicine

Thank You

Questions:  
[Betina.Yanez@Northwestern.edu](mailto:Betina.Yanez@Northwestern.edu)

