
Patient-Centered Care
November 12
Jacob Shreve, MD, MPH
Jennifer Lafata, PhD
Wayfinding: Moving from Risk Prediction to Action on Acute Care Events in Oncology
UNC Lineberger Cancer Network
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Start Time
12:00
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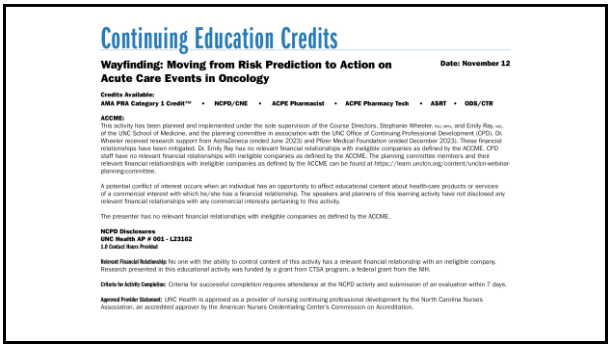
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Date: November 12
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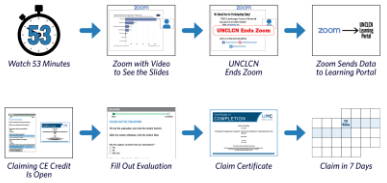

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Our Presenter

Jacob Stein, MD, MPH

Jacob Stein, MD, MPH is a medical oncologist with a clinical focus on caring for patients with sarcomas. These are rare and heterogeneous cancers that can affect patients of all ages, including adolescents and young adults.

Dr. Stein is also a health services researcher, and his work focuses on how to optimize care delivery systems to improve the quality of cancer care for all patients. This involves understanding the gaps and barriers within our current delivery systems, followed by the development and testing of interventions to improve those systems.

He is a North Carolina native, attended medical school and public health school at UNC, did his internal medicine training at the University of Washington in Seattle, and returned to UNC for fellowship and stayed on for faculty.

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Our Presenter

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Our Presenter

3. Jacob Stein, MD, MPH has an active role in our AVA Program at UNC, serving as the "Oncology Liaison; a role which he greatly enjoys. He advocates for the needs of AVAs across the division of oncology.

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2. Collaborations are one of the aspects of his career that he enjoys most, working with Dr. Elston Lafata on this Wayfinding effort, with the AVA team as above, with Dr. Lazard in the School of Journalism, with his surgical and radiation colleagues in the sarcoma clinical space.

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1. He was chief fellow at UNC a number of years ago and remain closely connected with the fellowship program, he loves teaching and mentoring our fellows, residents, and medical students!

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Our Presenter

Jennifer Elston Lafata, PhD

Dr. Jennifer Elston Lafata is faculty in the Division of Pharmaceutical Outcomes and Policy in the Eshelman School of Pharmacy at UNC Chapel Hill where she co-leads the UNC Cancer Care Quality Initiative and is an Improvement Advisor with UNC Health. As a health services researcher with a commitment to patient-centered care, her research is focused on cancer care delivery and decision making. As a practice-embedded health services researcher, she leverages health system data, including electronic health records, joined with other sources to identify and address multi-level factors affecting care quality and decision making. She uses diverse research methodologies, including quantitative, qualitative, and mixed methods along with the engagement of patients, caregivers and healthcare professionals to optimize our understanding of patient needs, care team needs, and the design of interventions to address these needs.

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Our Presenter

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5. Jennifer Lafata, PhD works with smart, passionate people from all kinds of disciplines--because no one solves hard problems alone.

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3. She doesn't just study patients and clinicians, I involve them. Their voices shape the questions I ask and how I answer them.
2. She studies how to make decisions in cancer care better, because decisions matters.
1. She has a sign in my house that says, "kindness matters"--it's how she listens, leads and learns.

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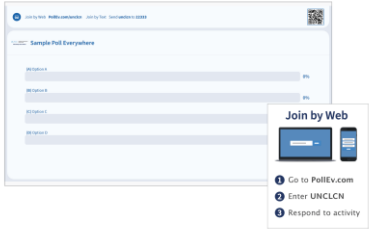
Sample Poll Everywhere Question



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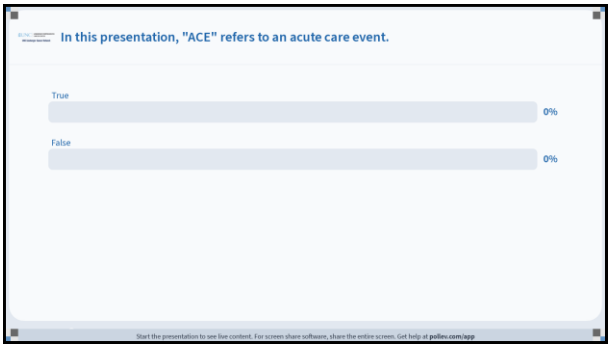

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Wayfinding: Moving from Risk Prediction to Action on Acute Care Events in Oncology

Jennifer Elston Lafata, PhD, UNC Lineberger Comprehensive Cancer Center
Jacob Stein, MD, MPH, UNC School of Medicine

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Agenda

- Background and Project Overview
- Key Accomplishments
- Results & Translational Insights
- Next Steps

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Learning Objectives

- **Upon completion of this seminar, participants will be able to:**
- Describe the burden of acute care events (ACEs, emergency department visits or hospitalizations) on individuals receiving cancer treatment.
- Explain the challenges in predicting and preventing ACEs among individuals with cancer.
- Identify promising strategies to proactively identify and prevent ACEs.

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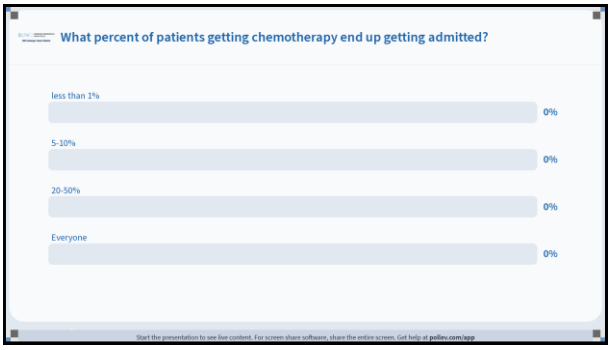
What percent of patients getting chemotherapy end up getting admitted?
less than 1%
0%
5-10%
0%
20-50%
0%
Everyone
0%
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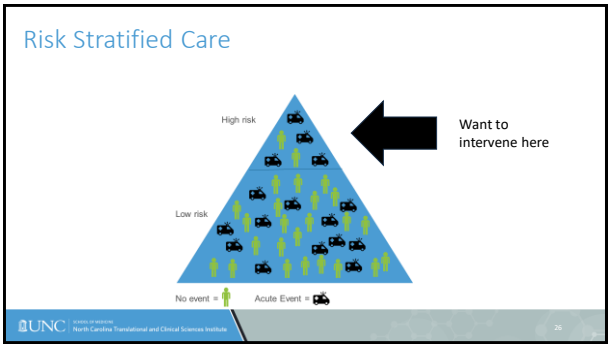
Risk Stratified Care
High risk
Low risk
Want to intervene here
No event =
Acute Event =
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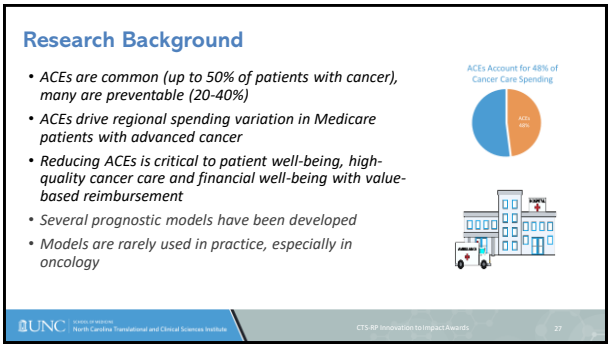
Research Background
ACEs are common (up to 50% of patients with cancer), many are preventable (20-40%)
ACEs drive regional spending variation in Medicare patients with advanced cancer
Reducing ACEs is critical to patient well-being, high-quality cancer care and financial well-being with value-based reimbursement
Several prognostic models have been developed
Models are rarely used in practice, especially in oncology
ACEs Account for 48% of Cancer Care Spending
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Why aren't prognostic models used in clinical practice?

Too complicated	0%
Not enough time	0%
Difficulties getting them to work within EHR (electronic health record)	0%
Not sure what to do with the results	0%
All of the above	0%

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Supportive Care Needs

Challenges in using predictive models for risk stratification:

1) Practice integration
2) Intervention tailoring

Predictive Modeling for Adverse Events and Risk Stratification Programs for People Receiving Cancer Treatment

[illegible]

Emergency department visits and hospitalizations are common among people receiving cancer treatment, accounting for a large proportion of spending in oncology care and negatively affecting quality of life. As oncology care shifts toward value- and quality-based payment models, there is a need to develop interventions that can prevent these costly and low-value events among people receiving cancer treatment. Risk stratification programs have the potential to address this need and optimally would consist of three components: (1) a risk stratification algorithm that accurately identifies patients with modifiable risk(s), (2) intervention(s) that successfully reduce this risk, and (3) the ability to implement the risk algorithm and intervention(s) in an adaptable and sustainable way. Predictive modeling is a common method of risk stratification, and although a number of predictive models have been developed for use in oncology care, they have rarely been tested alongside corresponding interventions or developed with implementation in clinical practice as an explicit consideration. In this article, we review the available published predictive models for treatment-related toxicity or acute care events among people receiving cancer treatment and highlight challenges faced when attempting to use these models in practice. To move the field of risk-stratified oncology care forward, we argue that it is critical to evaluate predictive models alongside targeted interventions that address modifiable risks and to demonstrate that these two key components can be implemented within clinical practice to avoid unplanned acute care events among people receiving cancer treatment.

JCO Oncol Pract 18:127-136. © 2021 by American Society of Clinical Oncology

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Project Overview

Translational Gap: Prognostic models are developed but rarely integrated into routine clinical decision-making.

What is "Wayfinding?"

- ***The statistical work of prognostic model builders is joined iteratively with clinical judgement to develop clinically*** *(and statistically)* ***informed groups of patients*** *who face similar risks and care needs for which targeted interventions can modify risk.*
- *Develop a* ***risk-stratification strategy*** *alongside the* ***identification of care strategies*** *to mitigate those risks, with iterative and continual feedback between two historically disconnected processes.*

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Project Goal and Aims

Help patients with cancer avoid ED/inpatient care

Project Goal:

Design a wayfinding process for engaging providers, researchers, and modelers to develop a predictive model to guide clinical interventions, using the case of predicting oncology patient risk for unplanned acute care events (ACEs)

Aims:

- *Develop a predictive model for oncology patients receiving treatment to determine risk of ACEs*
- *Test the effectiveness of a model-based intervention in reducing unplanned ACEs*
- *Determine acceptability and feasibility of the wayfinding process and identify strengths and challenges to its design*

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Interdisciplinary Research Team


Jennifer Elston Lafata, PhD


Jacob Stein, MD, MPH


Bahjat Qaqish, PhD


Jennifer Leeman, PhD


Yishu Zhang, MS


Soroush Fariman, PharmD/MSc


Solomon Ayehu, MD, MSc

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Interdisciplinary Advisory Panel


William Wood, MD, MPH


Emily Ray, MD, MPH


Gabriel Brooks, MD


Hanna Sanoff, MD, MPH


Benyam Muluneh, PharmD


Patricia Morfeld, RN


Christopher Frise, PhD, RN


Gabrielle Rocque, MD


Monica Hicks, RN


Linnea Van Pelt, RN

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Early Wayfinding Insights (the Translational Science)

- Clinical Advisory Panel emphasized importance of care teams being able to know patient risk prior to initiating treatment.
- This altered how we used EHR data to estimate risk:
  - Instead of relying on dispensing data, risk models use data contained within oncology treatment plans
  - Enabled initial model results to estimate risk earlier
  - But also limited focus to patients with infused medications
- Initially altered clinical team's thinking about what decisions the ACE models could inform.
  - Discussions with HEAC committee tempered these ideas

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Additional Insights (the Translational Science)

- Integration within EHR more likely if score is more than a "one and done"
- Pivoted to also include a repeated event model that continually predicts risk within next 30 days
  - Maybe useful framework for understanding risk among patients with late-stage disease
- Nursing/navigation staff discomfort with risk stratification when interventions are "low touch"

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Prognostic Modeling Overview

- Predictors available include:
  - Patient-related factors (e.g., socio-demographics)
  - Disease-related factors (e.g., cancer diagnoses)
  - Treatment-related factors (e.g., anti-cancer therapies)
  - Community-level factors (e.g., geocoding)
- Fitted two types of models:
  - A baseline model of expected risk given planned treatment and initial factor values
  - A time-varying model given therapy received and current factor values
- Iterative approach:

  Clinical team brainstormed applications/predictor ideas→ Analytical database developed →Initial models fit → Initial results discussed→ Models adapted and performance re-evaluated

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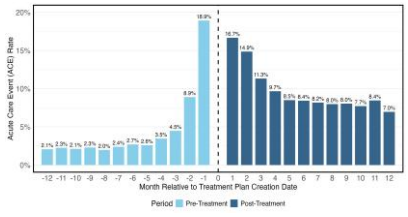
ACEs by Time

ACEs by Time



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What is the strongest predictor of ACE among patients receiving cancer treatment?

Recent Surgery 0%

Medicaid Insurance 0%

Prior ACE in the past month 0%

Late Stage Disease 0%

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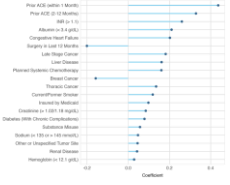
Two Models

Baseline Model Results

Model Performance

Test AUC	0.706 (0.667-0.746)			
Validation Set Target Sensitivity	20%	30%	40%	50%
Cutoff Value	0.296	0.267	0.248	0.209
Hold Off Set Test Sensitivity	20.9%	27.6%	32.7%	39.3%
Test Specificity	95.5%	92.7%	90.1%	83.4%
Test Accuracy	83.0%	81.9%	80.5%	76.0%
Observed Event Rate (High-Risk Group)	48.2%	43.2%	39.8%	32.2%
Observed Event Rate (Low-Risk Group)	14.2%	13.5%	13.0%	12.7%
% of Patients Flagged High-Risk	7.2%	10.6%	13.7%	20.3%

20 Most Important Predictors



Not yet published data

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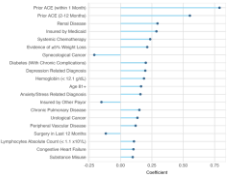
Two Models

Follow-up Model Results

Model Performance

Test AUC	0.699 (0.681-0.718)			
Target Sensitivity (on Validation Set)	30%	40%	50%	60%
Cutoff Value	0.168	0.135	0.110	0.091
Test Sensitivity	31.4%	41.0%	52.7%	61.9%
Test Specificity	89.7%	83.8%	76.0%	66.4%
Test Accuracy	83.3%	79.1%	73.5%	65.9%
Observed Event Rate (High-Risk Group)	27.2%	23.7%	21.3%	18.5%
Observed Event Rate (Low-Risk Group)	8.6%	8.0%	7.1%	6.6%
% of Patients Flagged High-Risk	12.6%	19.0%	27.1%	36.7%

20 Most Important Predictors



Not yet published data

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Intervention Development

- **Risk-stratified nurse integrated remote symptom monitoring (RSM)**
  - Targets patients in top 10th percentile of risk
  - Piloted in GI patients; established workflow
  - Expanding to patients in Breast & GU groups

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Expectations of Feeling Bad … Hope for Resolution

Because I've had that small side effect the last two treatments, I didn't press it. I'm like, you know, it'll eventually fade away. 011

It was maybe just feeling nauseous or what not. But I kind of figured that [pain] would come with it during the chemo anyway. So I really didn't think too much of it. 003

I kept saying it's this is going to pass. Yeah, I'm going to get over this. But it didn't. It began to get worse, so I knew I needed to just seek medical attention 006

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Challenges with Supportive Medications

I weaned myself off of the oxycodone… it made me feel like I was in a tunnel. And it was hard for me to walk. 011

[The fatigue] got worse throughout the night on that Thursday and I was just very, very weak, couldn't hold anything down… The Zofran or the Compazine was not eliminating or you know, alleviating any of that of the symptoms. 014

So I got that Senna before, probably it at least two or three months before, because I would sometimes have difficulty with constipation… but I only took the medicine twice because it made me feel like I was high. I was throwing up and I was like, that's not going to work. 009

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Intervention Development

- Risk-stratified nurse integrated remote symptom monitoring (RSM)
  - Targets patients in top 10th percentile of risk
  - Piloted among GI patients; established workflow
  - Next expanding to patients with Breast & GU disease
- **Wednesday Automated Patient Reminder ("tuck-in" contact)**
  - Text messaging/robotic telephone calls
    - Reminder to refill prescribed supportive (antiemetic and pain) medications as needed
    - Reminder to take supportive meds as prescribed
    - Encouragement to call care team with any new symptom or escalation
  - Patient choice: text message, telephone or opt-out option

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From Research to Bedside

- Ongoing monthly updates presented to UNC Health's Med Center Oncology Services
- EHR integration/digital services integration will facilitate spread within UNC Health
- Important to note this is being done without research dollars allocated to intervention delivery (only development and evaluation)

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Translational Science Impact

- *Wayfinding process influenced database development, model structure, feature selection, intervention planning and translation to the EHR*
- *Additional insights coming from*
  - *Evaluation of algorithmic fairness of models*
  - *Value proposition interviews for risk-stratified intervention development (navigators, CAP, high-risk patients / caregivers)*

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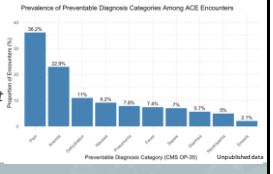
Project Plans

- *Ongoing data provision to evaluate tuck-in program and RSM*
- *Completion of qualitative interviews of navigators, patients (Aim 3)*
- *Descriptive work to better understand ACE among specific subpopulations*
  - *AYA population*
  - *Patients receiving immunotherapy*
  - *Preventable ACE*
  - *Phenotyping*
- *Systematic Review of stakeholder engagement for prognostic model translation*



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Future Goals

- *Socialize risk models to local oncology care teams once built in EHR*
- *Seeking funding for additional ACE phenotyping*
- *Exploring model validation and extension opportunities*
  - *Potential partnering with external CAP members; UCL collaborative*
  - *Specific clinical risk (CIPN)*
  - *Specific operational risks (delays in treatment initiation or completion)*
  - *Resource challenged areas (risk-stratified financial navigation)*
- *Additional research proposal to adapt established chronic care self-management support to cancer treatment context*
  - *Conducting value proposition interviews with patients and caregivers this fall*

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Thank you!

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Questions/Comments?

Nobody has responded yet.

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References

- Peterson DJ, Ostberg NP, Blayney DW, Brooks JD, Hernandez-Boussard T. Machine learning applied to electronic health records: identification of chemotherapy patients at high risk for preventable emergency department visits and hospital admissions. *JCO Clin Cancer Inform*. 2021;5:1106-1126. doi:10.1200/CCI.21.00116
- Brooks GA, Li L, Uno H, Hassett MJ, Landon BE, Schrag D. Acute hospital care is the chief driver of regional spending variation in Medicare patients with advanced cancer. *Health Aff (Millwood)*. 2014;33(10):1793-1800. doi:10.1377/hlthaff.2014.0280
- Stein J, Ossman P, Viera A, et al. Was this readmission preventable? qualitative study of patient and provider perceptions of readmissions. *South Med J*. 2016;109(6):383-389. doi:10.14423/SMJ.0000000000000465
- Osterman CK, Sanoff HK, Wood WA, Fasold M, Lafata JE. Predictive modeling for adverse events and risk stratification programs for people receiving cancer treatment. JCO Oncol Pract. 2022;18(2):127-136. doi:10.1200/OP.21.00198

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The Telehealth Team

Tim Poe – Director

Veneranda Obure – Technology Support Specialist
Jon Powell, PhD – Continuing Education Specialist
Oliver Marth – Technology Support Technician
Andrew Dodgson, DPT – Continuing Education Specialist
Patrick Muscarella – Technology Support Technician
Kimberly Riddick, BSN, RN, NPD-BC – Nurse Planner

The song ***Back Rhodes*** written and performed by **Don Poe**

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Research to Practice

November 19
12:00 PM

Shifting Paradigms in Radiation Therapy for Breast Cancer in North Carolina

Jean Wright, MD, FASTRO

Advanced Practice Provider

December 3
12:00 PM

Psycho-Oncology: Supporting the Mental Health of Oncology Patients

Melissa Holt, DNP, PMHNP-BC

Patient-Centered Care

December 10
12:00 PM

Cancer Immunotherapy: Patient-Centered Outpatient Toxicity Management

Faith Brianne Buchanan, PA-C

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Research to Practice

Updates on the Management of Early Stage and Metastatic Breast Cancer

Jeffrey Aldrich, MD

Patient-Centered Care

Caring for Young Adults with Cancer: Reproductive Health Considerations

Melissa Matson, MSN, RN, AGPCNP-BC, AOCNP

Advanced Practice Provider

Coping Skill Development for Health Care Providers Caring for Patients with Cancer

Melinda Manning, JD, MSW, CPC **Rachel Rifkin,** LCSW

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