ONCOLOGY ISSUES

This publication is a benefit of membership Association of Community Cancer Centers

Vol. 36 | No. 1 | 2021

Community Oncology Can Close the Gap in Cancer Research

The research program at Highlands Oncology Group

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March 1–5, 2021

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- Telehealth, Virtual Care Models, and Remote Monitoring
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- Managing Risk and Innovative Staffing Strategies
- New Models in Clinical Trials and Cancer Research
- Business Consolidation: Opportunities and Obstacles

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DEPARTMENTS

ACCC
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FROM THE EDITOR

Working Toward a Better Tomorrow

BY SIBEL BLAU, MD

The morning of March 1, 2020, I walked into a different world when I entered my clinic in Puyallup, Wash. It was the weekend after the first COVID-19-related death was reported in Seattle, only 45 miles away from my practice. That same weekend Northwest Medical Specialties, PLLC, created a task force and after several hours of meetings, our practice opened its doors with a new look, including screeners at the entrance and staff wearing masks and other personal protective equipment. Patients called to cancel their appointments, staff were worried but tried to maintain their workload, and managers and physicians began learning about recommendations that were sparse, evolving, and sometimes even contradictory.

Since those early days so much has changed in our world. The COVID-19 pandemic led to unprecedented challenges, both within the healthcare industry and the world at large. Though we have witnessed much unrest, we have already made it through some very difficult times with stories of great heroism and innovation, especially within the healthcare industry.

COVID-19 caused major economic downturns in almost every field. The Centers for Disease Control and Prevention estimated that for every one million patients who sought treatment in 2020, the U.S. healthcare system would incur roughly $5.3 billion of indirect costs.[1] And these costs did not include additional expenses incurred by providers and health systems responding to COVID-19; for example, investments in reconfiguring facilities. Cancer programs and practices around the country experienced a sudden need for rapid transformation, including:

- Access to personal protective equipment
- Clinic infrastructure changes
- Workforce instability due to illness
- Rapid implementation of telehealth
- Drops in screening appointments that led to a decline in new patient visits
- Fluctuations in patient volumes over time.

To make changes safely and properly, programs and practices adopted new workflows, re-assigned staff to reduce in-person clinic volumes, hired additional staff in new positions, and invested significantly in technology and equipment. It has been a challenging year for all, and there is still much work to be done.

And though the promise of effective vaccines brings great hope, a return to normalcy remains a distant goal. We must commit to a concrete long-term plan for COVID-19 and similar pandemics in the future. As available technologies rapidly evolve, we must address the current inadequacies of telehealth and serve all patients—whether they are elderly, economically disadvantaged, or technologically challenged—by delivering equitable and excellent care. But to get there we must remain open to change and welcome new methods of care delivery.

There are still many challenges ahead of us; the pandemic is far from over. The virus brings many unknowns, including potential long-term health consequences and whether the virus has the capacity to evolve in a manner that will require annual vaccinations. With the economic decline and financial uncertainties facing this country, we also need to figure out how to pay for the changes we have made in response to COVID-19 and how we can, as a country, continue to deliver quality healthcare going forward.

I believe in the power of science and human will. I am proud to be a member of an innovative medical community that continues to use our education, experience, and herculean work ethic to help this country prevail and recover from the terrible toll of 2020. As the new Editor-in-Chief of *Oncology Issues* at the start of a new year, I ask my fellow ACCC members to continue to hope for and work toward a better tomorrow. OI

Reference

1. Hutchins Coe E, Enomoto K, Finn P, et al. Understanding the hidden costs of COVID-19's potential impact on U.S. healthcare. Available online at: mckinsey.com/industries/healthcare-systems-and-services/our-insights/understanding-the-hidden-costs-of-covid-19s-potential-impact-on-us-healthcare#. Last accessed December 10, 2020.

Key Areas of Interest Going Into 2021

BY RANDALL A. OYER, MD

ACCC members enter 2021 with much to consider—both professionally and personally. Fortunately, we are a resilient and committed group. With the enormous pressures of COVID-19, the ever-increasing complexity of oncology care, and the persistent social factors that lead to medical injustice, it is difficult to think about tackling even one more job. Yet, we must, we can, and we do. Today I want to mention four specific areas that all cancer programs need to be watching, thinking about, and preparing for.

Geriatric Care. We are seeing two important trends that impact oncology care: more people living into their 80s and beyond and more cases of cancer in people considered "old" and "very old." In the U.S., the number of new cancer cases is expected to go from approximately 1.8 million in 2020 to more than 2.4 million in 2040, primarily due to rising numbers and proportion of people over age 65. ACCC is preparing our members to better serve older adults with cancer and their families with important resources that are ready for implementation at your programs now. Start with ACCC's evidence-based online gap assessment tool to see how your program aligns with guidelines and best practices. Read the customized report with specific suggestions for improvement. Then leverage ACCC's detailed, how-to guide to help implement these improvements at your program. Learn more at accc-cancer.org/geriatric.

Survivorship. Another welcome trend is the increase in cancer survivorship due to decades of research and cancer clinical trials. ACCC members and our patients owe a debt of gratitude and respect to patient and physician pioneers who participated in these cancer treatment studies. Currently 5 percent of the U.S. population are cancer survivors. This number is estimated to be 15 percent by the end of this decade. Clearly, we all need to be planning for and providing survivorship care in conjunction with our referring and primary care provider partners. ACCC has resources to help, including our Survivorship in the Era of Immuno-Oncology webinar lecture series, where experts discuss the unique survivorship needs of IO patients, including improving care coordination and communication within the multidisciplinary team and how to ensure patients' psychosocial and physical well-being. The lectures identify actionable steps that address the survivorship needs of this patient population.

Oncology Nutrition. The burgeoning science in oncology nutrition represents another opportunity to better serve our patients with cancer. New areas of oncology nutrition study that have direct applicability to patients include nutritional epigenomics, sarcopenia, and inflammatory biomarkers. All patients at diagnosis of cancer should be screened for nutritional needs—regardless of baseline weight or dietary history. Nutrition-related assessments and multimodal nutrition interventions are available. Year after year, *Oncology Issues* has included articles on the importance of nutrition services and highlighted the role of dietitians in improving the quality of life of cancer patients. Recent ACCC Innovator Award winners showcased the power of nutrition services, including "Partnering to Address Food Insecurity" and "Telehealth Technology Connects Patients with Nutrition Services." If you do not have a dietitian solely dedicated to your cancer program, share ACCC's "The Business Case for Hiring a Registered Dietitian Nutritionist" with your c-Suite today (accc-cancer.org/home/learn/management-operations/hiring-new-staff).

Research and Clinical Trials. Our patients with cancer depend on us to provide them with the latest advances in care. It is, therefore, our responsibility to make cancer treatment trials available to patients at the front line—in their own communities, where they live, work, and receive their cancer care. ACCC, in partnership with ASCO, has embarked on a national project to create opportunities for many more patients to have access to cancer treatment trials, particularly Black, ethnic minority, and other underserved people. Please read the ACCC Research Review e-newsletter (accc-cancer.org/research-review) and watch for updates in forthcoming ACCC communications.

As we head into 2021, ACCC thanks you for your membership, for participating in our education programs, and for partnering with us to ensure quality—and equitable—cancer care to all. OI

Coming in Your 2021 *ONCOLOGY ISSUES*

- Maine Cancer Genomics Initiative: A Model for Translational Outreach
- Remote Work Program for Hospital-Based Cancer Registrars
- Use of Pharmacy Informatics to Standardize Pharmacist Review of Oral Oncolytic Medications for Hospitalized Patients
- Medication Transitions in Hematologic Malignancy Patients at a Safety Net Hospital
- An Investigation of Self-Determined Work Motivation Among Young Adult Central Nervous System Cancer Survivors
- Transportation: A Holistic Approach to a Systemic Problem
- Tailoring Distress Screening in Oncology Populations: Timing Distress Screening in Surgically Resectable Esophageal Cancer
- Leveraging a 3D Lung Nodule Educational Tool to Reduce Patient Distress
- Utilizing Technology to Identify Patient Co-morbidities and Reduce Hospital and ED Admissions
- Onboarding Experienced Non-oncology Nurses to Address Staffing Shortages: Miami Cancer Institute's Oncology Training Academy
- Improve Oral Oncolytic Workflow and Reduce Treatment Delays with a Pharmacist Collaborative Practice Agreement
- Reducing Readmissions After Chemotherapy with Predictive Modeling of Risk Factors

more online @ accc-cancer.org

Financial Advocacy Network Annual Summit

WEBINAR

ICYMI: This webinar series is now available on demand. Topics include: Promoting Discussions of Cost with Newly Diagnosed Patients, Tracking Financial Assistance Benefits with Dedicated EHR Workflows, Monitor Your Revenue Cycle with a Fiscal Watchdog, Navigating the Unique Financial Challenges of Radiation Oncology, and Financial Advocacy Network Town Hall: Regional Roundtables. Watch today at accc-cancer.org/fan-virtual-summit.

Managing Oral Anti-Cancer Medications

PODCAST

ICYMI: On this episode of CANCER BUZZ, learn about the role of the interdisciplinary team in managing oral chemotherapy for patients with cancer, and discover how one cancer program improved its workflow while keeping the patient at the center. Listen now at accc-cancer.org/podcast-episode-24.

ACCC Research Review

E-NEWS

ICYMI: The November 2020 issue focused on issues related to workforce training for cancer clinical research. Whether a cancer program is currently conducting clinical studies or is considering becoming a trial site, the bedrock on which all training rests is an understanding that oncology clinical research is unique in the sphere of medical practice. Plus, operational strategies for accruing racial and ethnic minorities to clinical trials and increasing awareness of implicit bias. Read more at accc-cancer.org/research-review.

Oncology Pharmacy Webinar Series

WEBINAR

ICYMI: This webinar series is now available on demand. Topics include: Pharmacy Metrics for Off-Label Treatment; Pharmacists and Older Adults with Cancer: Effective Practices; Billing for Chemotherapy Patient Management: Extending and Elevating the Pharmacist Role; and Closing the Oncology Research Gap: Pharmacy's Role Defined. Watch, listen, and learn today at accc-cancer.org/open-webinar-series.

Between Life and Death

BLOG

ICYMI: ACCCBuzz shares how the book's author, Kashyap Patel, MD, pulled from experiences in his 30-year journey as a practicing oncologist in 3 countries and across 11 cities to write this collection of real-life stories of ordinary people who displayed extraordinary bravery as they approached the end of their lives. Read more at accc-cancer.org/between-life-and-death.

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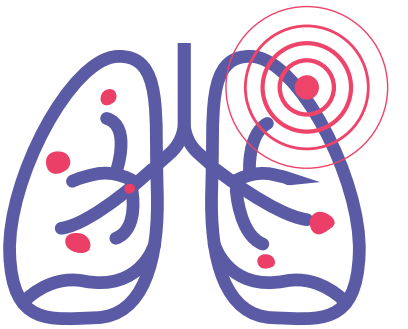


Report Finds People of Color Face Greater Burden, Worse Lung Cancer Outcomes

The American Lung Association's 3rd annual "State of Lung Cancer" report found:

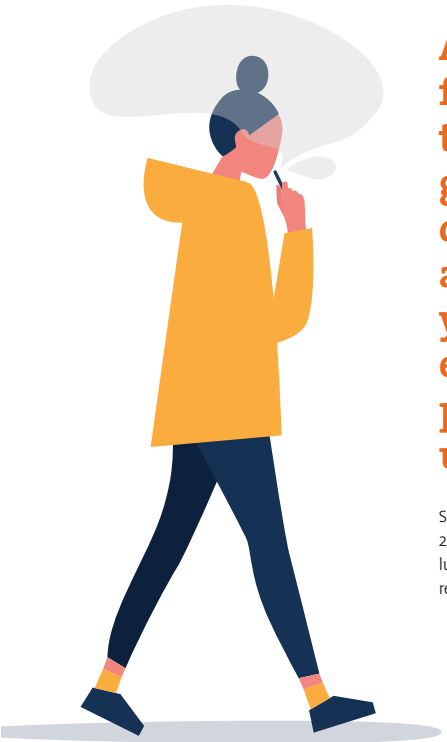
- Early diagnosis rates were **16%** lower among Black people and **13%** lower among Latinos than the White population.
- The rate of surgical treatment was **19%** lower for Black and Indigenous peoples (American Indians/Alaska Natives).
- Latinos had **39%** higher rates of no treatment compared to White Americans.

Source. 2020 "State of Lung Cancer" report. lung.org/research/state-of-lung-cancer.

1 in 3 Americans say they were never educated on healthy eating habits.

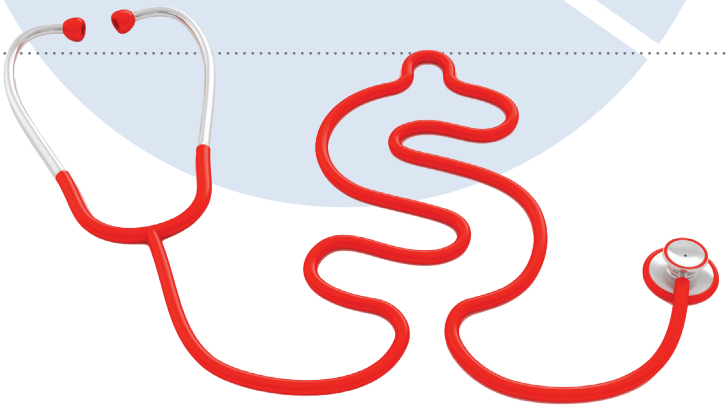
Source. Del Monte Foods. 2020 State of Healthy Eating in America Study. delmontefoods.com/growing-accessible-nutrition.

facts



Annual report finds that the federal government can do more to address the youth vaping epidemic and prevent tobacco use.

Source. American Lung Association. 2020 State of Tobacco Control Report. lung.org/our-initiatives/tobacco/reports-resources/sotc.



As out-of-pocket health costs rise, insured adults are seeking less primary care.

Source. Ganguli I, et al. Declining use of primary care among commercially insured adults in the United States, 2008–2016. *Ann Intern Med*. 2020. DOI: 10.7326/M19-1834.

Burnout in Physician Assistants on the Rise

A national survey of oncology PAs was conducted in 2019 using the same methods as a 2015 survey. The 2019 survey examined several factors, including personal and professional characteristics, collaborative practice, team structure, organizational context, and burnout. Researchers found that the rate of burnout for oncology PAs is nearly **50%**, up from **30%** in 2015. In 2019, **22%** of oncology PAs "felt a high level of depersonalization," compared with **18%** in the 2015 survey.

Source. Tetzlaff ED, et al. National study of burnout and career satisfaction among physician assistants in oncology: implications for team-based care. *J Clin Oncol Pract*. 2018;14(1):e11-e22.

Cancer care costs in the U.S. are projected to exceed $245 billion by 2030.

Source. AACR. Study to be published in *Cancer Epidemiology, Biomarkers & Prevention*.

ACCC Joins Lawsuit Against MFN Final Rule

BY CHRISTIAN G. DOWNS, JD, MHA

On Friday, Nov. 20, 2020, the Centers for Medicare & Medicaid Services (CMS) released the Most Favored Nation (MFN) Model Interim Final Rule with Comment Period. The model is mandatory for all Medicare physicians, non-physician practitioners, supplier groups (such as group practices), hospital outpatient departments (including 340B covered entities), ambulatory surgical centers, and other providers and suppliers that receive separate Medicare Part B fee-for-service payment for the model's included drugs, with certain exceptions.

The Model was set to begin on Jan. 1, 2021, and would operate for seven years. On December 23, a federal court issued a temporary restraining order blocking CMS from implementing the MFN Interim Final Rule on January 1.

If implemented, the first year of the demonstration includes 50 Part B drugs that encompass a high percentage of Medicare Part B drug spending. Instead of paying for these drugs based on the manufacturer's average sales price, Medicare will pay the MFN price, which will be based on the lowest per capita gross domestic product-adjusted price of any country in the market basket.

This model, if implemented, will have a devastating impact on cancer programs and practices already experiencing great financial hardship due to COVID-19 and the public health emergency. Additionally, cancer programs and practices in rural and underserved areas that have a high proportion of Medicare patients may be forced to close, consolidate, and/or reduce critical services with the decrease in reimbursement and the increase in administrative burden if the model goes into effect.

Most important, this model will reduce or eliminate Medicare beneficiaries' access to quality care. In fact, the rule acknowledges that a portion of the savings CMS expects to realize under the model is attributable to beneficiaries not accessing their drugs through the Medicare benefit, along with the associated lost utilization.

To prevent implementation of the model, ACCC joined with the Global Colon Cancer Association, the National Infusion Center Association, and the Pharmaceutical Research and Manufacturers of America to file a lawsuit against the U.S. Department of Health and Human Services, seeking an immediate injunction to prevent the implementation of the MFN model. Other stakeholder organizations, including the Community Oncology Alliance, soon filed additional lawsuits against the MFN model.

ACCC's request for an injunction was based on CMS's violation of the Administrative Procedure Act, which requires an agency to issue a proposed rule and allow for notice and comment from interested stakeholders before a final regulation is published. CMS violated the Administrative Procedure Act by implementing the MFN model through an interim final rule, with no Notice of Proposed Rulemaking and no opportunity for public comment. Further, a waiver of notice and comment must be supported by a showing of good cause, which we believe CMS has failed to demonstrate.

In other ACCC news, please join me in welcoming Kristin Ferguson, DPN, RN, OCN, as senior director of care delivery and policy. Dr. Ferguson brings more than a decade of experience in oncology care reflecting not only the versatile skill set that oncology nurses command but also the expanding roles that nurses play in cancer care delivery. In addition to clinical experience in both the inpatient and outpatient settings, Dr. Ferguson has served as a clinical research coordinator, a nursing coordinator, and a nurse administrator at a National Cancer Institute-designated cancer center. She serves on the Oncology Nursing Society board and has participated in Oncology Nursing Society advocacy initiatives, interned with the Community Oncology Alliance, and volunteered extensively in her community.

Dr. Ferguson will take over this column with the next *Oncology Issues*. In March, Dr. Ferguson, ACCC members, and stakeholders from across oncology will come together virtually at the ACCC 47th Annual Meeting & Cancer Center Business Summit, March 1-5. Real-world case studies will demonstrate how to lead through change, accelerate digital health capabilities, transform business operations and care processes, and enhance the patient and provider experience. In a climate of ongoing uncertainty, complexity, and relentless change, the ACCC 47th Annual Meeting & Cancer Center Business Summit offers an opportunity to experience equilibrium while gaining perspective on priorities and how best to prepare for challenges to cancer care delivery on the horizon. Learn more at accc-cancer.org/AMCCBS. OI

Christian G. Downs, MHA, JD, is executive director, Association of Community Cancer Centers, Rockville, Md.

2021 Oncology Coding Update

BY TERI BEDARD, BA, RT(R)(T), CPC

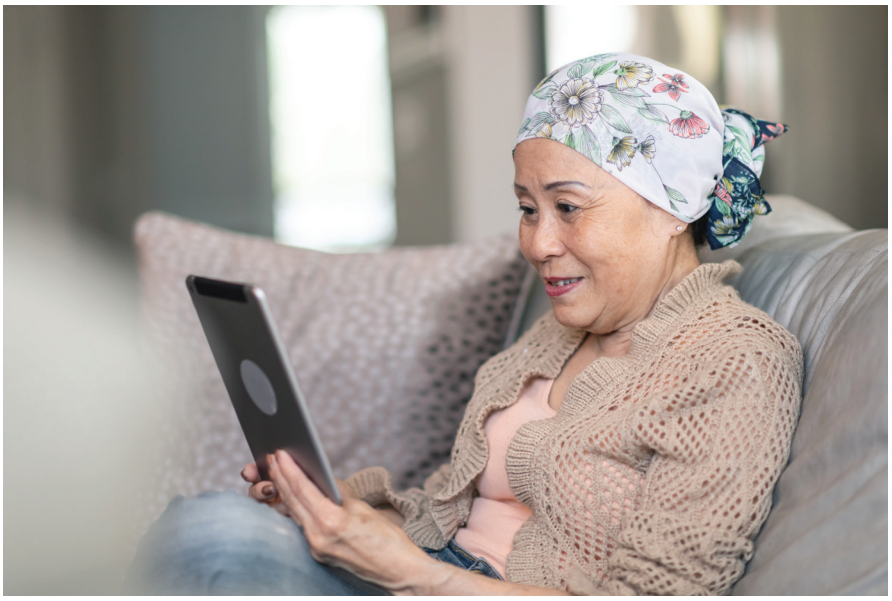
The Centers for Medicare & Medicaid Services and the American Medical Association finalized its coding updates for CY 2021. Though these code changes are not significant for oncology, it is important to update your coding practices and chargemasters to reflect these code changes. Below are coding changes specific to services that may be provided by or related to services by oncology specialties.

Revised Evaluation and Management Codes

- **99202**: Office or other outpatient visit for the evaluation and management (E/M) of a new patient, which requires a medically appropriate history and/or examination and straightforward medical decision making. When using time for code selection, 15 to 29 minutes of total time is spent on the date of the encounter.
- **99203**: Office or other outpatient visit for the E/M of a new patient, which requires a medically appropriate history and/or examination and low level of medical decision making. When using time for code selection, 30 to 44 minutes of total time is spent on the date of the encounter.
- **99204**: Office or other outpatient visit for the E/M of a new patient, which requires a medically appropriate history and/or examination and moderate level of medical decision making. When using time for code selection, 45 to 59 minutes of total time is spent on the date of the encounter.
- **99205**: Office or other outpatient visit for the E/M of a new patient, which requires a medically appropriate history and/or examination and high level of medical decision making. When using time for code selection, 60 to 74 minutes of total time is spent on the date of the encounter.
- **99211**: Office or other outpatient visit for the E/M of an established patient, which may not require the presence of a physician or other qualified healthcare professional. Usually, the presenting problem(s) are minimal.
- **99212**: Office or other outpatient visit for the E/M of an established patient, which requires a medically appropriate history and/or examination and straightforward medical decision making. When using time for code selection, 10 to 19 minutes of total time is spent on the date of the encounter.
- **99213**: Office or other outpatient visit for the E/M of an established patient, which requires a medically appropriate history and/or examination and low level of medical decision making. When using time for code selection, 20 to 29 minutes of total time is spent on the date of the encounter.
- **99214**: Office or other outpatient visit for the E/M of an established patient, which requires a medically appropriate history and/or examination and moderate level of medical decision making. When using time for code selection, 30 to 39 minutes of total time is spent on the date of the encounter.
- **99215**: Office or other outpatient visit for the E/M of an established patient, which requires a medically appropriate history and/or examination and high level of medical decision making. When using time for code selection, 40 to 54 minutes of total time is spent on the date of the encounter.

New Evaluation and Management Codes

- **G2211**: Visit complexity inherent to E/M associated with medical care services that serve as the continuing focal point for all needed healthcare services and/or with medical care services that are part of ongoing care related to a patient's single, serious condition or a complex condition. Add-on code, list separately in addition to office/outpatient E/M visit, new or established.
- **G2212**: Prolonged office or other outpatient E/M service(s) beyond the maximum required time of the primary procedure, which has been selected using total time on the date of the primary service; each additional 15 minutes by the physician or qualified healthcare professional, with or without direct patient contact. List separately in addition to Current Procedural Terminology codes **99205** or **99215** for office or other outpatient E/M services. Do *not* report **G2212** on the same date of service as **99354**, **99355**, **99358**, **99359**, **99415**, or **99416**. Do *not* report **G2212** for any time unit less than 15 minutes.



- **99417**: Prolonged office or other outpatient E/M service(s) beyond the total time of the primary procedure, which has been selected using total time, requiring total time with or without direct patient contact beyond the usual service, on the date of the primary service; each additional 15 minutes. List separately in addition to Current Procedural Terminology codes **99205** or **99215** for office or other outpatient E/M services.
- **G2250**: Remote assessment of recorded video and/or images submitted by an established patient (e.g., store and forward), including interpretation with follow-up with the patient within 24 business hours, not originating from a related service provided within the previous seven days nor leading to a service or procedure within the next 24 hours or soonest available appointment.
- **G2251**: Brief communication technology-based service (e.g., virtual check-in) by a qualified healthcare professional who cannot report E/M services, provided to an established patient, not originating from a related E/M service provided within the previous 7 days nor leading to a service or procedure within the next 24 hours or soonest available appointment; 5 to 10 minutes of medical discussion.

Chimeric Antigen Receptor T-Cell Therapy New Code

- **C9073:** Brexucabtagene autoleucel, up to 200 million autologous anti-CD19 chimeric antigen receptor-positive viable T-cells, including leukapheresis and dose preparation procedures, per therapeutic dose.

Revised Radiology Codes: Computed Tomography, Thorax

- **71250**: Computed tomography (CT), thorax, diagnostic, without contrast material.
- **71260**: CT, thorax, diagnostic, with contrast material.
- **71270**: CT, thorax, diagnostic, without contrast material, followed by contrast material(s) and further sections.

New Radiology Codes

- **71271**: CT, thorax, low dose for lung cancer screening, without contrast material(s).
- **0633T:** CT, breast, including 3D rendering, when performed, unilateral, without contrast material.
- **0634T:** CT, breast, including 3D rendering, when performed, unilateral, with contrast material.
- **0635T:** CT, breast, including 3D rendering, when performed, unilateral, without contrast material, followed by contrast material(s).
- **0636T:** CT, breast, including 3D rendering, when performed, bilateral, without contrast material.
- **0637T:** CT, breast, including 3D rendering, when performed, bilateral, with contrast material.
- **0638T:** CT, breast, including 3D rendering, when performed, bilateral, without contrast material, followed by contrast material(s).
- **32408:** Core needle biopsy, lung or mediastinum, percutaneous, including imaging guidance, when performed.
- **76145:** Medical physics dose evaluation for radiation exposure that exceeds institutional review threshold, including report.

Added Healthcare Common Procedure Coding System Codes

- **A959**: Fluoroestradiol F-18, diagnostic, 1 mCi.
- **C9068**: Copper Cu 64 dotatate, diagnostic, 1 mCi.
- **J9198**: Gemcitabine hydrochloride (Infugem), 100 mg.
- **C9069**: Injection, belantamab mafodontin-blmf, 0.5 mg.
- **C9070**: Injection, tafasitamab-cxix, 2 mg.
- **C9073**: Brexucabtagene autoleucel, up to 200 million autologous anti-CD19.
- **J9316**: Injection, pertuzumab, trastuzumab, and hyaluronidase-zzxf, per 10 mg.
- **J9223**: Injection, lurbinectedin, 0.1 mg.
- **G2206**: Patient received adjuvant treatment course including both chemotherapy and human epidermal growth factor receptor 2 (HER2)-targeted therapy.
- **G2207**: Reason for not administering adjuvant treatment course, including both chemotherapy and HER2-targeted therapy (e.g., poor performance status; ECOG = 3-4; Karnofsky = 50), cardiac contraindications, insufficient renal function, insufficient hepatic function, other active or secondary cancer diagnoses, other medical contraindications, patients who died during initial treatment course or transferred during or after initial treatment course.
- **G2208**: Patient did not receive adjuvant treatment course, including both chemotherapy and HER-targeted therapy.

Discontinued HCPCS Code

- **G0297:** Low-dose CT scan for lung cancer screening.

2021 Hospital Regulatory Update

BY TERI BEDARD, BA, RT(R)(T), CPC

On Dec. 2, 2020, the Centers for Medicare & Medicaid Services (CMS) issued the final rules for the Hospital Outpatient Prospective Payment System (HOPPS or OPPS) for CY 2021. The CY 2021 final rule is 1312 pages in length and located in its entirety online at cms.gov/files/document/12220-opps-final-rule-cms-1736-fc.pdf. Below is information that may be of interest to or may impact oncology specialties. Readers are encouraged to view the document in its entirety for further details.

Payment Rates for Facilities

CMS is increasing payment rates under the outpatient department fee schedule by 2.4 percent to the conversion factor. Utilizing values set as part of the Inpatient Prospective Payment System (IPPS), CMS estimates that the total payments to OPPS providers for CY 2021 will be approximately $1.61 billion compared to CY 2020 OPPS payments. With the increase to the fee schedule payments, it is estimated that urban hospitals will see an increase in payments of approximately 2.6 percent and rural hospitals will see an increase of 2.9 percent.

Wage Index

CMS will continue applying a wage index of 1.000 for frontier state hospitals; this policy has been in place since CY 2011. It ensures that lower population states are not "penalized" for reimbursement due to the low number of people per square mile when compared to other states. In response to population shifts between urban and rural hospitals, CMS had proposed in both FY 2021 IPPS and CY 2021 OPPS/ambulatory surgical center rules an adjustment to wage indexes utilizing the Office of Management and Budget updated delineations applied to the IPPS post-reclassified wage index. To limit the potentially significant impact to hospitals where the revised Office of Management and Budget delineations would result in a decrease in the wage index from CY 2020 to CY 2021, CMS proposed and finalized a 5 percent cap on any wage index decrease. This will be a one-year cap effective Jan. 1, 2021.

Clinic Visit Reimbursement

In CY 2020 CMS fully implemented changes in reimbursement to code **G0463** (Hospital outpatient clinic visit for assessment and management of a patient) for all off-campus departments, regardless of whether they had been excepted for payment of other outpatient services. This was due to the high volume of reporting for the outpatient clinic visit and what CMS believed was "unnecessary increases in the volume of outpatient services." To remove any incentivization in billing code **G0463**, the most widely reported outpatient services code, CMS finalized a site-neutral method for reimbursement. For any setting considered off-campus, more than 250 yards from the main buildings of the hospital, designated as either excepted or nonexcepted, CMS will reimburse code **G0463** at 40 percent of the on-campus outpatient reimbursement rate. Due to the high rate change, CMS implemented the reduction over a two-year period (2019 and 2020), rather than all at once. For CY 2021, code **G0463** will continue to be reimbursed at a payment rate of 40 percent of the OPPS rate for any outpatient off-campus hospital setting. For CY 2021 any off-campus provider, excepted and nonexcepted, will be reimbursed $47.50 for code **G0463**, and the on-campus outpatient departments will be reimbursed at a rate of $118.74 for the same code.

Payments of Drugs, Biologics, and Radiopharmaceuticals

Each year CMS assesses the drug packaging threshold in accordance with section 1833(t)(16)(B) of the Act. For CY 2021, CMS proposed and finalized to package drugs and biologics estimated at a per day administration cost less than or equal to $130—the same rate as CY 2020. The agency also proposed and finalized continuation of separate payment for items with an estimated per day cost greater than $130—with the exception of diagnostic radiopharmaceuticals, contrast agents, anesthesia drugs, drugs, biologics and radiopharmaceuticals that function as supplies when used in a diagnostic test or procedure, and drugs and biologics that function as supplies or devices when used in a surgical procedure.

CMS proposed and finalized to continue the policy of making packaging determinations on a drug-specific basis rather than by Healthcare Common Procedure Coding System (HCPCS) code for those codes that describe the same drug or biologic but in different dosages.

For CY 2021, CMS will continue the current payment policy in effect since CY 2013. This payment policy pays for separately payable

drugs and biologics at ASP+6 percent. These separately payable drugs and biologics are listed in Addenda A and B to the final rule. CMS will also continue to pay for separately payable non-pass-through drugs acquired with a 340B discount at ASP–22.5 percent; see section on 340B Drug Program for more details.

For drugs or biologics without sufficient data on sales price during the initial sales period, section 1847A(c)(4) of the Act allows for payments based on wholesale acquisition cost (WAC). In CY 2021, CMS will use a 3 percent add-on instead of a 6 percent add-on for WAC-based drugs. For drugs and biologics acquired under the 340B program, the 340B program rate (WAC–22.5 percent) would apply.

For CY 2021, CMS will continue the policy finalized in CY 2019 to make all biosimilar biological products eligible for pass-through payment and not just the first biosimilar biological product for a reference product. CMS will also continue to pay non-pass-through biosimilars acquired under the 340B program at ASP–22.5 percent of the biosimilar's ASP instead of the biosimilar's ASP–22.5 percent of the reference product's ASP.

340B Drug Discount Program

The 340B Drug Discount Program was established by section 340B of the Public Health Service Act by the Veterans Health Care Act of 1992 and is administered by the Health Resources and Services Administration within the Department of Health & Human Services. This program allows participating hospitals and other healthcare providers to purchase certain "covered outpatient drugs" at discounted prices from drug manufacturers.

In the CY 2018 HOPPS final rule, CMS finalized the policy to pay for drugs purchased under the 340B Drug Discount Program (does not include drugs on pass-through payment status or vaccines) to be reimbursed at the rate of ASP–22.5 percent. Since the implementation of the drastic reduction in reimbursement for drugs purchased under 340B program (ASP–22.5 percent), lawsuits have been filed alleging that CMS does not have the authority to make these changes. Recent litigation concluded, for CY 2018, Secretary Azar "exceeded his statutory authority" by adjusting the reimbursement rate to ASP–22.5 percent.

In response to the initial United States District Court for the District of Columbia findings, which stated that CMS could base Medicare payment amount on average acquisition cost of drugs purchased under the 340B program, CMS announced through the *Federal Register* they intended to conduct the survey for certain quarters within CYs 2018 and 2019.

The survey was sent to 100 percent of the hospitals that acquired drugs under the 340B programs and were paid for the drugs under OPPS in fourth quarter 2018 and/or first quarter 2019. The survey, which closed May 15, 2020, provided two options for responding, Detailed Survey or Quick Survey.

After applying several factors to determine the reduction, CMS also utilized the same ASP+6 percent factor applied to all drugs with pass-through status. CMS theorized that all drugs were afforded the same ASP+6 percent factor regardless of how they were purchased. This final adjustment resulted in a proposed 340B Drug Program discount of ASP–28.7 percent for CY 2021.

After consideration of stakeholder feedback and to maintain consistent and known payment for drugs acquired under 340B program for the remainder of the public health emergency and after it is declared over, CMS is finalizing their alternate proposal of continuing ASP–22.5 percent. This would continue the payment policy that has been in effect since 2018 and include continued reporting of modifier JG on claims with drugs purchased under the program.

CMS will continue to exempt rural sole community hospitals, children's hospitals, and PPS-exempt cancer hospitals from the 340B payment adjustment. In addition, these hospitals would still be required to report modifier TB for 340B-acquired drugs on claim forms and paid at ASP+6 percent. CMS would continue to pay for drugs not purchased under the 340B program at ASP+6 percent. Drugs and biosimilar biologics acquired under the 340B program and furnished in on-campus hospital departments, excepted off-campus provider-based departments, and nonexcepted off-campus provider-based departments paid under the physician fee schedule will be paid at ASP–22.5 percent. Biosimilar biological products will be paid at –22.5 percent of the biosimilar's ASP, not the reference drug's ASP.

Chimeric Antigen Receptor T-Cell

In CY 2019 the American Medical Association made available four new Category III Current Procedural Terminology (CPT®) codes related to chimeric antigen receptor (CAR) T-cell therapy. At the time CMS assigned each code a status indicator "B" (codes that are not recognized by OPPS when submitted on an outpatient hospital Part B bill type), these codes were not paid under OPPS. The codes created each describe a step in the process to genetically modify T-cells; the step-by-step process to manufacture a drug or biologic is not something Medicare reimburses.

Commenters proposed a new status indicator be assigned to the CAR T-cell Category III codes (**0537T**, **0538T**, and **0539T**) for CY 2021. CMS did not agree with commenters. The agency did recognize CAR T-cell therapy as unique and as a biologic there is no comparable other therapy with current CPT codes. There is current HCPCS coding approved for CAR T-cell therapies, which includes leukapheresis and dose preparation procedures, and these are included in the manufacturing of the biologics. However, because of their inclusion in the manufacturing, there is no separate payment for these HCPCS codes. Though CMS has not established reimbursement for the Category III codes from the American Medical Association, the agency did indicate that these codes could be reported for tracking purposes. Tables 1 and 2, right, list the CAR T-cell HCPCS and Category III codes, respectively, and their finalized ambulatory payment classification assignments for CY 2021.

Blood Clotting Factors

CMS reimburses blood clotting factors under the same payment methodology as other non-pass-through separately paid drugs and

Table 1. CAR T-Cell Therapies Final APC Assignment for HCPCS Codes Q2041, Q2042, and C9073 for CY 2021

HCPCS CODE	LONG DESCRIPTOR	FINAL CY 2021 APC
Q2041	Axicabtagene ciloleucel, up to 200 million autologous anti-CD19 CAR-positive viable T-cells, including leukapheresis and dose preparation procedures, per therapeutic dose	9035
Q2042	Tisagenlecleucel, up to 600 million CAR-positive viable T-cells, including leukapheresis and dose preparation procedures, per therapeutic dose	9194
C9073	Brexucabtagene autoleucel, up to 200 million autologous anti-CD19 CAR-positive viable T-cells, including leukapheresis and dose preparation procedures, per therapeutic dose	9391

Table 2. CAR-T Preparation and Administration Final SI and APC Assignment for CPT Codes 0537T, 0538T, and 0540T for CY 2021

CPT CODE	LONG DESCRIPTOR	PROPOSED CY 2021 SI	FINAL CY 2021 SI	FINAL CY 2021 APC
0537T	CAR-T therapy; harvesting of blood-derived T lymphocytes for development of genetically modified autologous CAR T-cells, per day	B	B	N/A
0538T	CAR-T therapy; preparation of blood-derived T lymphocytes for transportation (e.g., cryopreservation, storage)	B	B	N/A
0539T	(CAR-T) therapy; receipt and preparation of CAR T-cells for administration	B	B	N/A
0540T	(CAR-T) therapy; CAR T-cell administration, autologous	S	S	5694

SI = status indicator; B = codes that are not recognized by OPPS when submitted on an outpatient hospital Part B bill type (12x and 13x); S = procedure or service, not discounted when multiple ASP.

biologics under OPPS and includes an additional furnishing fee. CMS proposed to continue to reimburse blood clotting factors at ASP+6 percent along with an updated furnishing fee. CMS did not receive any comments to this proposal, so it was finalized without modification. CMS indicated that the actual figure of the percentage change in the applicable Consumer Price Index and the updated furnishing fee calculation using the Consumer Price Index would be made available on the CMS website.

Blood Not Otherwise Classified Code

Recently the number of blood products available increased and continues to increase compared to the number of products available for use over the last 15 to 20 years. Because of this increase, stakeholders have requested from CMS a way to track and increase utilization of these new blood products through an HCPCS code to allow for payment of unclassified blood products. Typically, unclassified procedures are assigned the APC with the lowest payment level of the family; however, blood products are generally assigned their own individual APC.

Beginning Jan. 1, 2020, CMS created HCPCS code **P9099** (Blood component or product not otherwise classified) for reporting of unclassified blood products. When the code was created it was assigned a status indicator of "E2" (Not payable by Medicare when submitted on an outpatient claim) for CY 2020. Stakeholder feedback indicated that this created many issues; specifically, the code was not reimbursed,

and it was rejected by CMS when reported on the claim, so the utilization could not be tracked.

Due to stakeholder feedback, CMS is finalizing the alternative proposed. HCPCS **P9099** will be separately reimbursed with assigned status indicator of "R" in CY 2021. The assigned payment rate will equal the lowest paid separately payable OPPS blood product, HCPCS **P9043** (Infusion, plasma protein fraction (human), 5 percent, 50 mL) with a CY 2021 national rate of $7.99 per unit as listed in Addendum B.

Changes to Supervision of Non-surgical Extended Duration Therapeutic Services

There are specific non-surgical services identified by CMS that have an extended duration, meaning that they may run several hours to complete, like drug administration. Some of these services will have an initial supervision level assigned, and when it is determined that the patient is stable and the remainder of the service can be provided under general supervision, the level is changed. These services have had a hybrid level of supervision and are termed non-surgical extended duration services. Multiple drug administration services are assigned to this group, including:

- **96365**: Ther/proph/diag iv inf init
- **96367**: Tx/proph/dg addl seq iv inf
- **96368**: Ther/diag concurrent inf
- **96369**: Sc ther infusion up to 1 hr
- **96371**: Sc ther infusion reset pump
- **96374**: Ther/proph/diag inj iv push
- **96375**: Tx/pro/dx inj new drug addon.

For CY 2021, CMS proposed and finalized to permanently change the minimum level of supervision for these services to general for the entire services. This would include the initiation, which had previously required direct supervision. CMS does stress that it is at the discretion of the hospital whether or not the change to general supervision for a given scenario is in the best interest of the patient. This change allows for flexibility of the hospital on a case-by-case basis but provides hospitals the opportunity to also require direct supervision during any part of the service as appropriate.

Radiation Oncology Model: Waiver of Proposed Rulemaking

On Sept. 18, 2020, CMS released the final rule related to the Radiation Oncology (RO) Model with an expected start date of Jan. 1, 2021, lasting for five years with a set end date of Dec. 31, 2025. Because of stakeholder feedback about the significant challenges in beginning the new payment model in early 2021, CMS released notification of intention to delay the start date to July 1, 2021.

Within the CY 2021 OPPS final rule, CMS officially delayed the start of the RO Model and outlined the changes within performance year one (PY1) as a result of the delay. CMS indicated that the delay was to ensure that participation in the model during the public health emergency did not further strain participant ability to implement the changes and still effectively treat patients in a safe and efficient manner. The six-month delay is intended to provide participants the opportunity to prepare and more appropriately learn the model components, train staff on the new procedures, and prepare for the new quality measure reporting, which begins in 2022.

The following is a short summary of the changes to the RO Model as finalized in the CY 2021 OPPS final rule. As the start date approaches, CMS is conducting webinars and additional education on the model, and it is possible that there may be additional changes to the RO Model not identified or published at this time.

- Start date of July 1, 2021, ***will not*** require a re-randomization of ZIP codes selected to participate and posted to CMS website.
- RO Model will be a 4.5-year model beginning July 1, 2021, and ending Dec. 31, 2025. PY1 will be six months, each performance year after that (PY2-PY5) will be 12 months.
- Quality measure reporting: The quality measures requirement will be delayed until PY2 (Jan. 1, 2022, to Dec. 31, 2022); RO participants must report quality data measures for PY2 in March 2023. Quality measures finalized in the RO Model final rule will continue to be the quality measures reported, unless CMS specifies different individual measure specifications.
- CMS-approved contractor to administer the Consumer Assessment of Healthcare Providers and Systems Cancer Care Survey for Radiation Therapy is delayed.
- Clinical data element reporting will begin Jan. 1, 2022.
- Quality withhold payments: No quality withhold payment (2 percent) in PY1. Beginning in PY2, a 2 percent withhold will be applied to the trended national base rates after the case mix and historical experience adjustments.
- No quality reconciliation payment amount PY1 for professional and dual participants.
- Advanced Payment Model (APM) status: Expect RO Model to meet criteria for the MIPS (Merit-Based Incentive Payment System) APM under the Quality Payment Program starting PY2. Delay in RO Model start, RO participants will not be eligible for 5 percent APM incentive payment for qualifying APM participants in PY1 based on participation in RO Model. Certified electronic health record technology requirements to begin PY2, Jan. 1, 2022. Annual certification required for PY2 through PY5.

CMS Most Favored Nation Model Interim Final Rule

On Nov. 20, 2020, CMS announced the Most Favored Nation (MFN) Model, a new Medicare payment model related to payments for Part B drugs. This model is in response to President Trump's Sept. 13, 2020, Executive Order on Lowering Drug Prices by Putting America First. This model tests the method of lowering drug costs by paying no more than the lowest price drug manufacturers receive in other similar countries, specifically any country in the Organisation for Economic Co-operation and Development (OECD) that has a gross domestic product (GDP) per capita that is at least 60 percent of the U.S. GDP per capita.

Drug spending in the United States has steadily increased and significantly outpaces spending on other Part B services, and U.S. drug prices surpass those of other countries. Per the Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, Medicare Part B

fee-for-service drug spending per enrollee for 2006-2017 grew 8.1 percent. This is more than twice the per capita spending on Medicare Part D, which is 3.4 percent and almost three times the overall retail prescription per capita drug spending, which is 2.9 percent. It is expected that per capita spending on Medicare Part B physician-administered drugs and separately payable hospital outpatient drugs will grow at a similar annual rate of 8 percent between 2020 and 2027, not including potential increases related to the COVID-19 pandemic.

Drug acquisition costs in the United States also exceed those in Europe, Canada, and Japan based on an Assistant Secretary for Planning and Evaluation analysis completed in October 2018. The analysis compared U.S. drug acquisition costs for Part B physician-administered drugs to those in 16 other developed countries, including Austria, Belgium, Canada, Czechia, Finland, France, Germany, Greece, Ireland, Italy, Japan, Portugal, Slovakia, Spain, Sweden, and the United Kingdom. The study focused on 27 drugs, which accounted for 64 percent of total Medicare Part B spending in 2016. In general, the U.S. acquisition costs were 1.8 times higher. One drug was identified to be comparable to that in other countries; however, the U.S. had the highest drug prices for 19 of the 27 drugs evaluated. In some instances, the U.S. prices were up to seven times higher than international prices. A similar study in 2018 supported that ASP rates were at least 2.05 times higher than those in other OECD countries with a GDP of 60 percent.

The model was scheduled to go into effect Jan. 1, 2021; however, on December 23, a federal court issued a temporary restraining order blocking CMS from implementing the MFN Interim Final Rule. If implemented, the model is considered a nationwide, mandatory model and will include the following key elements.

Included Drugs

The drugs included within the model focus on a Medicare Part B drugs that result in a high percentage of Part B spending. There are 50 single-source drugs and biologics (including biosimilar biological products) included within the first year based on 2019 spending.

Some drugs have been excluded from the model, including drugs used at home, as well as certain vaccines, oral drugs, multiple source drugs, intravenous immune globulin, compounded drugs, radiopharmaceuticals, and drugs with an emergency use authorization or U.S. Food and Drug Administration approval to treat COVID-19. Drugs without specific HCPCS codes will also be excluded, specifically those billed under "not otherwise classified" codes, such as **J3490**.

In addition, drugs billed with an HCPCS code to which generic drugs are assigned will be excluded. These are excluded because they are already subject to a competitive market, and pricing is already reflective of generic product pricing. To encourage the use of biosimilars, CMS is not excluding biosimilar biological products from the MFN Model; however, because of the relative lower annual Medicare Part B spending for HCPCS codes for separately payable biosimilar biological products through 2019, only one biosimilar biological product is included for PY1.

The model focuses on separately payable Medicare Part B drugs; therefore, payment for products bundled into another procedure or service will not be affected by the model. This concept does not exclude drugs that are packaged under one Medicare payment system, while separately payable in another setting, because the inclusion of a particular drug is based solely on those receiving separate payment.

For future years, CMS will maintain approximately 50 drugs in the model during the seven-year model period. It is expected that changes will be necessary to add drugs to the model on an annual basis. These will coincide with drugs that move to the top 50 drugs based on updated annual Part B spending. CMS believes that this will identify potential shifts in utilization to drugs that have not yet been included within the model. Drugs already included in the model will continue to be part of the model for future years unless the drug is withdrawn from the U.S. market, if the HCPCS code is deleted without replacement, or if a drug is excluded due to one of the accepted exclusion criteria.

CMS has indicated the potential to include other types of products in future years, such as blood related, plasma derived, and human tissue products. CMS is also considering a potential exclusion of other drugs; for instance, gene and cell therapies, such CAR-T products. The drugs included within the model for PY1 are published in table 2 of the Interim Final Rule. CMS will publish the MFN Model Drug HCPCS Codes List quarterly on the MFN Model website: innovation.cms.gov/initiatives/most-favored-nation-model.

Model Drug Payment

Currently separately paid Part B drugs are paid based on the manufacturer's ASP plus an add-on fee related to overhead costs associated with drugs and biologics. This amount is calculated quarterly based on manufacturer-submitted data. In this model, the CMS payment will be based on a blended formula that includes the lowest adjusted international price, known as the "MFN price," and the ASP for the specific drugs included in the model. The MFN price will be based on the lowest GDP-adjusted price paid by an OECD member country with a GDP per capita that is at least 60 percent of the U.S. GDP.

The MFN price will be phased in at 25 percent per year over a four-year period, specifically the first four years of the seven-year model. Years 4 to 7 of the model will be at 100 percent of the MFN price. Table 3, page 14, outlines the schedule for this phased-in approach.

The MFN price and the blended formula will not allow for the model payment amount to exceed the ASP. CMS has stated that the phased-in approach may be accelerated during the initial four years if the U.S. prices rise faster than inflation. Illustrative MFN drug payment amounts per unit billed are provided within the Interim Final Rule in table 6. This table outlines the illustrative price for each drug selected to be included in the model, along with the corresponding HCPCS code, code dosage, ASP amount, model payment amount, and corresponding MFN OECD country.

CMS will continue to calculate MFN drug payment amounts on a quarterly basis

Table 3. Phase-In of MFN Prices by Performance Year

	BLEND OF THE ASP AND MFN PRICE FOR AN MFN MODEL DRUG AT THE HCPCS CODE LEVEL
Year 1	75 percent applicable ASP and 25 percent MFN price
Year 2	50 percent applicable ASP and 50 percent MFN price
Year 3	25 percent applicable ASP and 75 percent MFN price
Year 4	100 percent MFN price
Year 5	100 percent MFN price
Year 6	100 percent MFN price
Year 7	100 percent MFN price

utilizing the most recent ASP and international drug pricing information. Because of reporting timelines of ASP data by manufacturers, there will be a two-quarter lag between the ASP data and the use of that data within the Medicare payment calculation.

ASP Add-on Payment

Currently Part B drugs are paid based on the ASP+6 percent; however, the MFN Model will replace this amount with a flat payment per dose that is uniform across all drugs included within the model. CMS defines dose as "the number of HCPCS billing units reported on a claim line."

This rate was calculated using 6.1224 percent of the 2019 spending on drugs designated to be included in the first year of the model. CMS then increased the amount to equal 6 percent post-sequestration and applied an inflation factor. The per dose add-on payment will be calculated once at the beginning of the model and will not be recalculated again. For future quarters, updates to the add-on payment will be achieved through use of the cumulative inflation factor. The per dose add-on for the first quarter of 2021 will be $148.73.

The estimated impact by specialty related to the add-on payment is provided in table 8 of the Interim Final Rule. Hematology/oncology ranks the highest in the percentage of MFN Model drug spending, equating to 29.2 percent. Other specialties defined as high spending include rheumatology, medical oncology, hematology, and gynecology/oncology. Based on 2019 data, all but 9 of the top 35 specialties impacted by the MFN Model will see increases in add-on revenue on average compared to 4.3 percent of the applicable ASP with a single payment amount. The nine specialties impacted are expected to be hematology/oncology, medical oncology, neurology, hematology, gastroenterology, gynecological/oncology, infectious disease, hematopoietic cell transplantation and cellular therapy, and dermatology.

Specific to drugs acquired under the 340B program, the MFN drug payment amount cannot exceed the non-model drug payment amount for a drug submitted with the JG modifier (identifies drugs purchased under the 340B program). If policy related to payment for 340B drugs at ASP–22.5 percent continues, the MFN drug payment amount will be capped at ASP–22.5 percent and the MFN participant will receive the per dose add-on payment amount.

In efforts to continue support for reduction in out-of-pocket drug costs and to minimize confusion for beneficiaries, CMS will waive the coinsurance and deductible amounts for the add-on payment. Beneficiary cost-sharing will be waived for the per dose add-on amount, and Medicare will pay the entire allowed payment amount for the alternative add-on payment.

Participants

Participation in the model will be mandatory for Medicare-participating providers and suppliers that receive Part B fee-for-service payment. This includes physicians, non-physician practitioners, supplier groups, and hospital outpatient departments, including 340B covered entities, ambulatory surgical centers, and other providers that receive separate Part B payments for the included drugs. It is expected that claims from these participants will make up approximately 88 percent of the annual Medicare Part B spending on drugs.

Participants are not required to enroll in the model, because participation will be effectuated by the submission of a claim inclusive of an MFN Model drug. Participants will continue to bill separately payable MFN Model drugs, and they will be responsible for collecting beneficiary cost sharing amounts as normal.

Exclusions to mandatory participation do apply for cancer hospitals, children's hospitals, critical access hospitals, rural health clinics, federally qualified health centers, and Indian Health Service facilities. Exclusions also apply to participants of other Innovation Center models testing fully

capitated or global payments for outpatient hospital services and Part B drugs. Examples of this exclusion include the Maryland Total Cost of Care Model and the Pennsylvania Rural Health Model. This type of exclusion applies to the first and second quarters of the first performance year, and further continuation of the exclusion will be determined based on the ability for those models to incorporate savings on Part B drug spending.

Exclusions also apply to community mental health centers, comprehensive outpatient rehabilitation facilities, outpatient rehabilitation facilities, and other providers and suppliers that do not submit claims for Medicare Part B drugs or are not paid separately for Medicare Part B drugs. CMS is also excluding Part B drugs that are furnished in the inpatient setting, administered through durable medical equipment, orally administered, or paid under the End-Stage Renal Disease Prospective Payment System.

The model also offers a financial hardship exemption for model participants whose revenue is significantly affected by the model. To be eligible for a financial hardship exemption, the MFN participant must submit a request for a financial hardship exemption to CMS. The submission process will be in accordance with the instructions CMS will post on the MFN Model website prior to Oct. 1, 2021. Requests must be submitted to CMS within 60 calendar days following the end of the performance year for which the MFN participant seeks a financial hardship exemption.

If the financial hardship exemption is granted, CMS will provide a reconciliation payment for the previous performance year. CMS does not foresee many MFN participants that will qualify for the reconciliation payment for PY1 due to the phased in approach.

Beneficiaries

The model includes beneficiaries who are furnished an MFN Model drug by a MFN participant, while enrolled in Medicare Part B. This includes only beneficiaries with Medicare as the primary payer and does not include Medicare Advantage or other group health plans. In the event that a beneficiary receives outpatient hospital services, including MFN Model drugs, during the three days immediately preceding a hospital admission, the outpatient hospital services are treated as inpatient services if the beneficiary has Medicare Part A coverage. As a result, the services are not separately payable under Medicare Part B. This policy will continue to apply under the MFN Model; therefore, if a beneficiary receives an MFN Model drug in an hospital outpatient department that is an MFN participant and is admitted to this hospital within three days, those services, including drugs, will be treated as inpatient services (in accordance with Medicare inpatient payment policies) and will not be separately payable under the MFN Model.

Claim Submission

CMS has published model-specific claims submission instructions, which include reporting of a new model-specific HCPCS code (**M1145**: MFN drug add-on, per dose). This code will be required to be submitted on a separate claim line for the MFN Model drugs included on the claim with the corresponding number of units for the number of doses separately payable. CMS has clarified that MFN participants will count the number of claim lines with an HCPCS code that are included within the model and the units field will be utilized to report the number of doses of a separately payable MFN Model drug. This will exclude the number of claim lines billed with the JW modifier indicating wastage. MFN participants will continue to bill for drug waste on separate claim lines with the JW modifier.

Quality Measures

The model intends to be inclusive of quality measures to include potential measures related to the following areas.

- Patient experience
- Medication management
- Medication adherence
- Patient access and utilization.

CMS has indicated that the model will include robust monitoring activities, such as analysis of claims data, patient survey data, and site visits to identify any negative consequences and to ensure that beneficiaries' access to medication is not impacted. CMS is cautious of over-burdening MFN Model participants; therefore, only one quality measure will be required, which focuses on patient experience. This will be accomplished via patient survey, which will be fielded by CMS and initiated in PY1. The agency has indicated that if the patient experience of care quality measure and claims-based monitoring strategies are found to be insufficient to adequately measure the quality of care that MFN beneficiaries are receiving or MFN participants are providing, CMS may specify additional measures to monitor quality.

Resources

CMS has published and made available additional resources, information, and regulations on the Most Favored Nation Model website: innovation.cms.gov/initiatives/most-favored-nation-model. The agency has indicated that additional information and technical documentation will be posted on this website and updated on a quarterly basis. OI

2021 Physician and Freestanding Facility Regulatory Update

BY TERI BEDARD, BA, RT(R)(T), CPC

On Dec. 1, 2020, the Centers for Medicare & Medicaid Services (CMS) issued the final rule for the Medicare Physician Fee Schedule (PFS) for CY 2021. The CY 2021 final rule is 2,165 pages in length and located in its entirety at the following link: cms.gov/files/document/12120-pfs-final-rule.pdf. Below is information that may be of interest to or may impact oncology specialties. Readers are encouraged to view the document in its entirety for further details.

Payment Rates

CY 2021 is the second year in which there is no specific increase to the conversion factor (CF). As part of the Medicare Access and CHIP Reauthorization Act of 2015, beginning in CY 2020 the CF is frozen at the previous year's value with no increases for the next five years. The CY 2020 CF is $36.0896, and this value is still used for CY 2021 with direct adjustment. CMS must remain budget neutral by maintaining expenditures within $20 million plus or minus each year relative to the increases and/or decreased of the relative value units (RVUs). When it is projected that the impact from any RVU changes will be outside the expected budget, a budget neutrality factor is applied to the CF to bring it back into range and maintain budget neutrality. CMS is applying a −10.20 percent budget neutral adjustment to the CF; this is a decrease from the proposed adjustment of −10.61 percent. Regardless, the budget neutrality factor adjustment will result in an overall decrease in payments for CY 2021, with a CF value of $32.4085. Table 4, right, outlines the combined impact per specialty of the RVU changes for CY 2021.

Within the final rule, CMS indicated that the most widespread impacts to specialties of the RVU changes resulted from misvalued code adjustments for new and revised codes. Specialties such as endocrinology, rheumatology, family practice, and hematology/oncology will experience increases when compared to other specialties. This is due primarily to the increases in the values for the office/outpatient evaluation and management (E/M) visits. However, there are also increased payments that resulted from the updates to supply and equipment pricing and indirect practice expense (PE) allocations for some office-based services.

The largest impact to the CY 2021 PFS is the restructured E/M visit; these visits currently make up 20 percent of the total PFS spending. Changes to the E/M visits included adjusted values to the different level of office/outpatient codes, the addition of add-on codes for complexity of services, and an add-on code for prolonged service. **Note on December 27, 2020 the Consolidated Appropriations Act, 2021, which included the COVID-relief package, was signed into law reversing many of the payment cuts outlined in MPFS final rule. This includes increasing the conversion factor by 3.75 percent, extending the sequestration waiver, and a moratorium on payment for the new complex services add-on code with evaluation and management visits.

Valuation of Specific Codes for CY 2021

Within the CY 2021 proposed and final rule publications, CMS addressed quite a few of the misvalued and/or proposed value changes to specific series of new and established Current Procedural Terminology (CPT®) codes. CMS explains that the rationale for the proposed changes is based on values recommended by the Relative Value Scale Update Committee (RUC) and other organizations that CMS looks to for assistance in setting appropriate values for codes. These changes include the following.

Radiation Treatment Delivery (CPT Code 77401)

CPT 77401 (Radiation treatment delivery, superficial and/or ortho voltage, per day) has been on the radar for some time regarding valuation. In 2017 this code was identified through the high-volume growth screen for utilization of 10,000 or more, which is an increase of at least 100 percent from 2021 through 2017. In 2019, the RUC recommended the CPT Editorial Panel review this code to better define services associated with the treatment delivery in 2019. CMS proposed refinement of the clinical labor associated with **77401**, reduction of two minutes, to the standard three minutes and did not propose inclusion of requested equipment for "Lead Room." The agency indicated that because the lead-shielded room can be used for other services, it would be considered an indirect PE; therefore, CMS finalized the direct PE inputs without inclusion of the lead-shielded room and at the reduced clinical labor input.

Table 4. Estimated Impact on Total Allowed Charges by Specialty

(A) SPECIALTY	(B) ALLOWED CHARGES (MILLION $)	(C) IMPACT OF WORK RVU CHANGES	(D) IMPACT OF PE RVU CHANGES	(E) IMPACT OF MP RVU CHANGES	(F) COMBINED IMPACT*
Hematology/oncology	$1,707	8%	5%	1%	14%
Radiation oncology and radiation therapy centers	$1,809	−3%	−3%	0%	−5%

*Column F may not equal the sum of columns C, D, and E due to rounding.

Proton Beam Treatment Delivery CPT-Codes

CMS reviewed CPT **77522** (Proton treatment delivery; simple, with compensation) and CPT **77523** (Proton treatment delivery; intermediate). Both codes are contractor-priced Category I codes with an estimated 2017 utilization of more than 10,000 services. Even though the RUC determined that these codes should remain contractor priced because of the significant equipment invoice pricing, they were still recommended for survey of PE (practice expense). CMS proposed and finalized that the Medicare Administrative Contractors continue to set contractor pricing per their respective jurisdictions to allow providers and Medicare Administrative Contractors to more easily adapt to and shift reimbursement in response to market-based costs.

Personal Protective Equipment CPT Code 99072

The CPT Editorial Panel released code **99072** after the release of the 2021 PFS proposed rules. During the comment period, stakeholders reached out to CMS for immediate consideration of valuation of code **99072** because of the expenditures incurred by providers in response to COVID-19. Specifically, stakeholders requested valuation of direct PE inputs for supplies and clinical staff time beyond the services provided with the code. Because of the increased costs incurred by stakeholders, CMS finalized on an interim basis an increase in pricing for several supplies based on submitted invoices for code **99072**. These supplies included N95 masks, surgical masks, and face shields. CMS did not finalize any RVUs for code **99072**; it is considered a bundled code.

E/M Guidelines

These visits comprise nearly 40 percent of allowed charges for PFS services, and office/outpatient E/M visits make up nearly 20 percent of the allowed PFS charges. Nearly all specialties utilize and bill for E/M visits; for some this code comprises the bulk of their charges. For other specialties that are more procedural based, the bulk of services billed are not E/M.

CMS had proposed a new code to account for complexity of services provided to new and established patients. CMS indicated that it believes that the updated definitions for CPT **99202-99215** reflect the work provided in a "typical" office outpatient visit; however, for some specialties these codes do not adequately capture the resources associated with patient care. CMS proposed a Healthcare Common Procedure Coding System (HCPCS) add-on code: temporary code **GPC1X**. CMS finalized the add-on code as:

- **G2211**: Visit complexity inherent to E/M associated with medical care services that serve as the continuing focal point for all needed healthcare services and/or with medical care services that are part of ongoing care related to a patient's single, serious condition or complex condition. Add-on code, list separately in addition to office/outpatient evaluation and management visit, new or established.

This code is for use by any specialty for the ongoing care needs of the patient and potentially evolving illness.

The care provided would be distinctly separate from existing services represented by preventative and care management services. Instead HCPCS add-on code **G2211** "reflects the time, intensity, and PE when practitioners furnish services that enable them to build longitudinal relationships with all patients (that is, not only those patients who have a chronic condition or single-high risk disease) and to address the majority of patients' health care needs with consistency and continuity over longer periods of time." CMS believes that the addition of this code could bolster comprehensive and longitudinal care in the rural setting. The PFS 2021 national rate, facility and non-facility, for code **G2211** is $15.88.

CMS did indicate that there would also be circumstances in which it would *not* be appropriate to bill HCPCS G2211: *"... there are many visits with new or established patients*

where HCPCS add-on code G2211 would not be appropriately reported, such as when the care furnished during the office/outpatient E/M visit is provided by a professional whose relationship with the patient is of a discrete, routine, or time-limited nature, such as a mole removal or referral to a physician for removal of a mole; for treatment of a simple virus; for counseling related to seasonal allergies, initial onset gastroesophageal reflux disease; treatment for a fracture; and where comorbidities are either not present or not addressed, and/or and when the billing practitioner has not taken responsibility for ongoing medical care for that particular patient with consistency and continuity over time, or does not plan to take responsibility for subsequent, ongoing medical care for that particular patient with consistency and continuity over time."

In addition, CMS stated that **G2211** would not be reported when the office/outpatient E/M visit is reported with a payment modifier, such as –25. In these instances, there are already separate and distinct services provided to the patient beyond the E/M visit, which would preclude the use of the add-on code.

Documentation to support the ongoing relationship between the practitioner and patient could be represented by the patient relationship codes **X1**, **X2**, **X3**, **X4**, and **X5** established under the Medicare Access and CHIP Reauthorization Act of 2015. Each of the patient relationship modifiers defines the relationship between the patient and practitioner at the time the item or service is furnished.

For CY 2021 the American Medical Association created this new CPT code:

- **99417**: Prolonged office or other outpatient evaluation and management service(s) (beyond the total time of the primary procedure which has been selected using total time), requiring total time with or without direct patient contact beyond the usual service, on the date of the primary service; each additional 15 minutes (List separately in addition to CPT codes **99205**, **99215** for office or other outpatient evaluation and management services).

This code is billable with time-based reporting for office/outpatient visit codes that have reached the threshold for a level 5 visit (**99205** and **99215**).

In the 2021 PFS proposed rule, CMS indicated that it did not agree with the time thresholds for the level 5 office/outpatient codes to be able to bill for a prolonged service code as outlined by the American Medical Association. For example, code **99215**, level 5 established outpatient visit, the time range is 40 to 54 minutes. According to CMS, if the billing practitioner spent 55 minutes with the patient, he or she could not bill the prolonged services code in addition to the level 5 visit code. The agency indicated that if it allowed this, the practitioner would be double dipping his or her time because the prolonged services code represents 15-minute increments. In the scenario presented, the practitioner would be double counting 14 minutes, the last 14 minutes to meet the top threshold for **99215** and the first 14 minutes of the prolonged service to meet the additional 15 minutes.

CMS believes that when the practitioner uses the time-based method, the prolonged services code could be selected when the outpatient office visit level 5 is exceeded by at least 15 minutes on the date of service of the actual visit. For example, code **99215** as described above has a time threshold of 54 minutes, and to bill for prolonged services, CMS believes that the visit must last at least 69 minutes. This number is 15 more minutes than the top threshold of 54 minutes and is completely separate time from time counted for the actual visit level.

To remedy the discrepancies in reporting for prolonged services with office/outpatient visits, CMS created this HCPCS add-on code:

- **G2212**: Prolonged office or other outpatient evaluation and management service(s) beyond the maximum required time of the primary procedure which has been selected using total time on the date of the primary service; each additional 15 minutes by the physician or qualified healthcare professional, with or without direct patient contact (List separately in addition to CPT codes 99205, 99215 for office or other outpatient evaluation and management services).

In addition, CMS states, "Do not report **G2212** on the same date of service as **99354**, **99355**, **99358**, **99359**, **99415**, **99416**. Do not report **G2212** for any time unit less than 15 minutes."

Telehealth Services After the End of the Public Health Emergency

In response to COVID-19 and as part of the public health emergency (PHE), CMS expanded telehealth services. As part of these waivers and expansion, CMS allowed for telehealth services to be provided in various settings, including office settings and the patient's home. As part of the Interim Final Rule released in both March and April 2020, CMS indicated that when the PHE ends the waivers and expansions would also end and services would revert to pre-PHE days.

Because of the uncertainty of how long the PHE will last and the fact that even when the PHE is declared over the effects of COVID-19 and the response of patients in their lack of comfort to return to a semblance of "normal" may linger, CMS has finalized a phased-in end to the waivers and expansions for some items rather than a hard-and-fast stop.

Specifically, CMS proposed and finalized several changes to telehealth services moving forward. Any of the newly added services to the Category 3 level of telehealth as part of the PFS final rule will remain on the Medicare telehealth services list through the calendar year in which the PHE for COVID-19 ends. Unfortunately, this does not include code **77427**: Radiation treatment management, 5 treatments, because this code was added as part of the waivers list of temporarily added telehealth services related to the COVID-19 response. CPT **77427** will end as a telehealth service on Jan. 21, 2021. Commenters stated that because most radiation oncology practices were able to secure adequate PPE, it was no longer necessary for the radiation treatment management code to be available as telehealth and CMS agreed. In addition, CMS was concerned that the components of code **77427** could not be adequately provided by real-time audio-video capabilities.

Telehealth Services Technology Requirements

During the PHE, CMS removed language and allowed for telehealth expanded services to be provided by "multimedia communications equipment that includes, at a minimum, audio and video equipment permitting two-way, real-time interactive communication between the patient and distant site physician or practitioner." This allowed practitioners and patients to the use smartphones when communicating with audio and video capability. CMS finalized an update to the last sentence of the Medicare telehealth services regulation that stated: "prohibits the use of telephones, facsimile machines, and electronic mail systems for purposes of furnishing Medicare telehealth services." The regulation prohibited the use of telephones and could be confusing when a smartphone and its capabilities for audio and video are used for the visit. By removing the term "telephones," outdated references to technology no longer present and potentially create confusion.

Communication Technology-Based Services

As part of the CY 2019 PFS Final Rule, CMS created several G-codes for services furnished via telecommunications technology. These services are not considered telehealth services but use telecommunications technology between the practitioner and patient. Codes **G2250** and **G2251**, proposed and finalized by CMS, may be billed by nonphysician practitioners. These new codes would also be billable by nonphysician practitioners, consistent with their scope of practice, for those who cannot bill independently for E/M services. The value of these codes would match **G2010** and **G2012**, respectively.

- **G2250**: Remote assessment of recorded video and/or images submitted by an established patient (e.g., store and forward), including interpretation with follow-up with the patient within 24 business hours, not originating from a related service provided within the previous seven days nor leading to a service or procedure within the next 24 hours or soonest available appointment.
- **G2251**: Brief communication technology-based service (e.g., virtual check-in) by a qualified health care professional who cannot report evaluation and management services, provided to an established patient, not originating from a related E/M service provided within the previous seven days nor leading to a service or procedure within the next 24 hours or soonest available appointment; 5 to 10 minutes of medical discussion.

Audio-Only Visits

Prior to the PHE, CMS did not provide coverage for telephone services codes, **99441-99443**. In large part, this is because

the codes can be provided to the patient, parent, or guardian. CMS does not typically cover services or codes that are not directly provided to the patients themselves. However, as part of the PHE and feedback by stakeholders that most beneficiaries did not want to, know how to, or have the capabilities to use video technology for visits, CMS approved their coverage.

Telecommunication codes available prior to the PHE were only the short duration G-codes referenced above and CMS noted that, for some patients, a longer telephone visit is needed. CMS finalized that the agency will not recognize the telephone codes **99441**-**99443** under the PFS after the PHE has ended. Once the PHE ends, the agency will assign the status "B" for "bundled" to the codes. Instead, CMS believes that the communication technology-based services above should be reported for patients after the PHE ends.

On an interim basis, CMS created an HCPCS code for an extended audio-only assessment service. This code has been designed for those patients who even after the PHE has ended are still reluctant to return for in-person visits to their practitioner. This will also allow CMS to determine whether this code should be made permanent. Effective for CY 2021, this HCPCS code is available for use:

- **G2252**: Brief communication technology-based service (e.g., virtual check-in) by a physician or other qualified health care professional who can report evaluation and management services, provided to an established patient, not originating from a related E/M service provided within the previous seven days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment; 11 to 20 minutes of medical discussion.

This code was cross-walked to code **99442** for valuation. HCPCS code **G2252** is not a replacement for in-person visit; instead, it is meant to assess whether one is needed. The only technological requirement for this service is that the communication technology must be synchronous, happening in real-time. As with other similarly defined services, if it results from an E/M service in the previous seven days or in an E/M or other service within the next 24 hours or soonest available appointment, it is bundled into the in-person service.

Physician Supervision for Telehealth Services

For the duration of the PHE, CMS has redefined direct supervision under the PFS to be provided through interactive real-time audio-video telecommunication technology. This allows the physician to provide real-time assistance and direction throughout a procedure or service by allowing him or her to see and interact with the staff member and patient without adding any unnecessary exposure. It is important to note that the supervision adjustments are meant as a minimum requirement. There may be circumstances in which the physical presence of the physician with the patient in the same location is necessary and more appropriate; for example, administration of certain drugs or therapies. CMS stressed in these types of scenarios that the physician and facility must make the best decision given the situation, even if this means potential exposure due to the nature of the scenario.

CMS finalized to extend direct supervision expansion under the PFS to end later in the calendar year in which the PHE ends or on Dec. 31, 2021. This allows, along with other waivers and extensions, an easement to the change in supervision and for physicians and practices to prepare for the change back to the in-person requirement

CMS Most Favored Nation Model Interim Final Rule

On Nov. 20, 2020, CMS announced the Most Favored Nation Model, a new Medicare payment model related to payments for Part B drugs. This model is in response to President Trump's Sept. 13, 2020, Executive Order on Lowering Drug Prices by Putting America First. This model tests the method of lowering drug costs by paying no more than the lowest price that drug manufacturers receive in other similar countries, specifically any country in the Organisation for Economic Co-operation and Development that has a gross domestic product per capita that is at least 60 percent of the U.S. gross domestic product per capita. For information on included drugs, drug payments, participation and beneficiary requirements, claims submission, and quality measures, turn to pages 12-15 in the CY 2021 Hospital Regulatory Update. OI

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tools

Approved Drugs

- On Nov. 25, Y-mAbs Therapeutics, Inc. (ymabs.com) announced that the U.S. Food and Drug Administration (FDA) approved **Danyelza® (naxitamab-gqgk)** in combination with granulocyte-macrophage colony-stimulating factor for the treatment of pediatric patients one year of age and older and adult patients with relapsed or refractory high-risk neuroblastoma in the bone or bone marrow who have demonstrated a partial response, minor response, or stable disease to prior therapy.
- On Dec. 1, the FDA approved **Gallium 68 PSMA-11 (Ga 68 PSMA-11)** (University of California, Los Angeles, ucla.edu and the University of California, San Francisco, ucsf.edu), the first drug for positron emission tomography imaging of prostate-specific membrane antigen positive lesions in men with prostate cancer.
- On Dec. 1, the FDA approved **Gavreto™ (pralsetinib)** (Blueprint Medicines, blueprintmedicines.com) for adult and pediatric patients 12 years of age and older with advanced or metastatic RET-mutant medullary thyroid cancer who require systemic therapy or RET fusion-positive thyroid cancer who require systemic therapy and who are radioactive iodine refractory (if radioactive iodine is appropriate).
- On Oct. 14, the FDA extended the approval of **Keytruda® (pembrolizumab)** (Merck, merck.com) for the following indications: adult patients with relapsed or refractory classical Hodgkin's lymphoma and pediatric patients with refractory classical Hodgkin's lymphoma or classical Hodgkin's lymphoma that has relapsed after two or more lines of therapy.
- On Nov. 13, the FDA granted accelerated approval to **Keytruda® (pembrolizumab)** (Merck, merck.com) in combination with chemotherapy for the treatment of patients with locally recurrent unresectable or metastatic triple-negative breast cancer whose tumors express PD-L1 as determined by an FDA-approved test.
- On Oct. 16, the FDA granted regular approval to **Venclexta® (venetoclax)** (AbbVie Inc., abbvie.com and Genentech Inc., gene.com) in combination with azacitidine, decitabine, or low-dose cytarabine for newly diagnosed acute myeloid leukemia in adults 75 years or older or who have comorbidities precluding intensive induction chemotherapy.

Drugs in the News

- The Janssen Pharmaceutical Companies of Johnson & Johnson (janssen.com) announced the submission of a biologics license application (BLA) to the FDA seeking approval of **amivantamab** for the treatment of patients with metastatic non-small cell lung cancer with epidermal growth factor receptor (EGFR) exon 20 insertion mutations whose disease has progressed on or after platinum-based chemotherapy.
- Apexigen, Inc. (apexigen.com) announced that the FDA has granted orphan drug designation status to **APX005M** for the treatment of esophageal and gastro-esophageal junction cancer and for the treatment of pancreatic cancer.
- Rafael Pharmaceuticals, Inc. (rafael-pharma.com) announced today that FDA has granted fast track designation to **CPI-613® (devimistat)** for the treatment of metastatic pancreatic cancer.
- AstraZeneca (astrazeneca.com) and Daiichi Sankyo's (daiichisankyo.com) **Enhertu® (trastuzumab deruxtecan)** received FDA acceptance of its supplemental BLA and has also been granted priority review in the United States for the treatment of patients with human epidermal growth factor receptor 2-positive metastatic gastric or gastro-esophageal junction adenocarcinoma.
- Aprea Therapeutics, Inc. (aprea.com) announced that the FDA has granted fast track designation for **eprenetapopt** in the treatment of patients with TP53-mutant acute myeloid leukemia.
- BridgeBio Pharma, Inc. (bridgebio.com) announced that the FDA has accepted its new drug application (NDA) for **infigratinib** for individuals with cholangiocarcinoma or cancer of the bile ducts.
- Regeneron Pharmaceuticals, Inc. (regeneron.com) announced that the FDA has accepted for priority review its supplemental BLA for PD-1 inhibitor **Libtayo® (cemiplimab-rwlc)** to treat patients with first-line locally advanced or metastatic non-small cell lung cancer with greater than or equal to 50 percent PD-L1 expression.
- ADC Therapeutics SA (adctherapeutics.com) announced that the FDA has accepted its BLA and granted priority review status for **Lonca (loncastuximab tesirine)** for the treatment of relapsed or refractory diffuse large B-cell lymphoma.

- Ipsen (ipsen.com) announced that the FDA has granted fast track designation for **Onivyde® (irinotecan liposome injection)** as a second-line monotherapy treatment of small cell lung cancer.
- Bristol Myers Squibb (bms.com) and Exelixis, Inc. (exelixis.com) announced that the FDA has accepted the supplemental BLA and supplemental NDA, respectively, for **Opdivo® (nivolumab) in combination with Cabometyx® (cabozantinib)** for patients with advanced renal cell carcinoma.
- PMV Pharmaceuticals, Inc. (pmvpharma.com) announced that the FDA has granted fast track designation to **PC14586** for the treatment of patients with cancer with locally advanced or metastatic solid tumors that have a p53 Y220C mutation.
- PTC Therapeutics, Inc. (ptcbio.com) announced that the FDA has granted **PTC596** orphan drug designation and fast track designation for the potential treatment of leiomyosarcoma. Furthermore, the FDA has granted **PTC596** a rare pediatric disease designation and orphan drug designation for the potential treatment of diffuse intrinsic pontine glioma.
- RhoVac (rhovac.com) announced that the FDA granted fast track designation to **RV001**, the company's prostate cancer drug candidate.
- Surface Oncology (surfaceoncology.com) announced that the FDA has granted fast track designation to **SRF388** for the treatment of patients with hepatocellular carcinoma, or liver cancer, who have been previously treated with standard therapies, such as vascular endothelial growth factor targeted agents and programmed death ligand blockade.
- AstraZeneca (astrazeneca.com) announced it received acceptance from the FDA for its supplemental NDA and has also been granted priority review for **Tagrisso® (osimertinib)** for the adjuvant treatment of patients with early stage (IB, II, and IIIA) EGFR-mutated non-small cell lung cancer after complete tumor resection with curative intent.
- TG Therapeutics, Inc. (tgtherapeutics.com) announced that the FDA has granted fast track designation to the combination of **ublituximab and umbralisib** for the treatment of adult patients with chronic lymphocytic leukemia. The company has initiated a rolling submission of a BLA to the FDA requesting approval of **ublituximab** and **umbralisib** for the treatment of patients with chronic lymphocytic leukemia.
- Zymeworks Inc. (zymeworks.com) announced that the FDA has granted breakthrough therapy designation for **zanidatamab** in patients with previously treated human epidermal growth factor receptor 2 gene-amplified biliary tract cancer.

Approved Genetic Tests and Assays

- 4D Path (4dpath.com) announced that the FDA granted breakthrough device designation for its patented computer-aided cancer diagnostic and precision oncology platform, which has demonstrated promise of significant improvements over the existing standard of care.
- Roche (roche.com) announced FDA approval of expanded claims for the **cobas® EGFR Mutation Test v2** as a companion diagnostic for a broader group of therapies in the treatment of non-small cell lung cancer. This claim expansion allows the test to be used as a companion diagnostic for all five currently FDA-approved EGFR tyrosine kinase inhibitor therapies targeting EGFR mutations L858R and exon 19 deletions in accordance with the approved therapeutic product labelling.
- enGene Inc. (engene.com) announced that the FDA has granted fast track designation to **enGene for EG-70**, the company's lead investigational non-viral gene therapy, for the treatment of patients with Bacille Calmette-Guerin-unresponsive non-muscle-invasive bladder cancer.
- The FDA approved the next-generation sequencing-based **FoundationOne®CDx** test (Foundation Medicine, Inc., foundationmedicine.com) as a companion diagnostic to identify fusions in neurotrophic receptor tyrosine kinase (NTRK) genes NTRK1, NTRK2, and NTRK3 in DNA isolated from tumor tissue specimens from patients with solid tumors eligible for treatment with Vitrakvi® (larotrectinib).
- Foundation Medicine, Inc. (foundationmedicine.com) announced that the FDA approved **FoundationOne® Liquid CDx** for three new companion diagnostic indications to help match patients who may benefit from treatment with specific FDA-approved targeted therapies. The new indications are for Piqray® (alpelisib) in advanced or metastatic breast cancer; Rubraca® (rucaparib) in advanced ovarian cancer; and Alecensa® (alectinib) in a certain type of metastatic non-small cell lung cancer. The FDA also approved a label expansion for FoundationOne Liquid CDx to report additional select copy number alterations and genomic rearrangements and an expanded indication to identify patients with BRCA1, BRCA2, and/or ATM alterations in metastatic castration-resistant prostate cancer who may be appropriate for treatment with Lynparza® (olaparib).
- MiR Scientific (mirscientific.com) announced that it has received FDA breakthrough device designation for its **miR Sentinel™ PCC4 Assay (miR Sentinel Prostate Test)**.
- Agilent Technologies Inc. (agilent.com) announced that it has received FDA approval for the use of **PD-L1 IHC 22C3 pharmDx** as an aid in identifying patients with triple-negative breast cancer for treatment with Keytruda® (pembrolizumab).

AI Tools

- Ezra (ezra.com) announced that it has received FDA 510(k) premarket authorization for its artificial intelligence (AI), designed to decrease the cost of magnetic resonance imaging-based cancer screening, assisting radiologists in their analysis of prostate magnetic resonance imaging scans. It is the first prostate AI to be cleared by the FDA.
- Braid Health (braid.health/www) secured FDA clearance for its AI-powered diagnostic collaboration software, improving diagnostic access and reducing costs for large healthcare systems, urgent care clinics, and retail clinics. The Braid mobile application allows providers and radiologists to access, review, and annotate images and share results with patients in real time from any mobile device. OI

spotlight

Spencer Cancer Center, East Alabama Medical Center
Opelika, Alabama

Spencer Cancer Center provides its scattered rural population in east central Alabama a suite of services that match those of comprehensive cancer centers in large urban areas. Located on the main campus of East Alabama Medical Center, the stand-alone facility opened in June 2019. A recognized provider of high-quality holistic cancer care, Spencer Cancer Center is accredited by the Commission on Cancer as a comprehensive community cancer program and by the American College of Radiology for positron emission tomography (PET)/computed tomography.

Before opening the new facility, East Alabama Medical Center offered medical, radiation, and surgical oncology and hematology services within its main hospital. When first planning to house cancer services separate from the hospital, leadership developed a plan that would allow the oncology program to grow along with the community. In every decision the medical center made—from the number of infusion chairs to the treatment and technology it would offer—Spencer Cancer Center was built for the future. "With the foresight involved in designing a cancer center of this size and space and bringing the technology that we have, we've got the latest and greatest," explains Matt Sherer, MBA, MSHA, executive director at Spencer Cancer Center. "There's not another cancer center within a six-hour driving radius that we couldn't compete with." The new, modern facility also received an award from the Alabama Council of The American Institute of Architects in 2019 after it was voted the best institutional building in Alabama the same year. The 59,596-square-foot, two-story building combines natural and man-made materials evoking language of the surrounding environmental landscape. Exterior material selections represent the advancement of cancer care over time, with stone representing earlier years. As the building grows upward, aluminum panels and glass represent the modern technology used in contemporary medicine.

Staffing a World-Class Facility

Spencer Cancer Center's medical and radiation oncology providers are employed by East Alabama Medical Center, and its surgical oncology services are provided by a private practice housed within the hospital. Its radiation oncology department is staffed by two radiation oncologists, six radiation therapists, two radiation oncology nurses, two dosimetrists, a physicist, two registration representatives, and two PET/computed tomography technicians, one of whom is PET nationally certified. Housed on the first floor of the cancer center, radiation oncology offers two state-of-the-art linear accelerators and provides ARC, IMRT, SBRT, SRS, 3D, and brachytherapy.

Located on the second floor of the cancer center is the medical oncology clinic and a 28-chair infusion suite, which is staffed by six registered nurses, one medical assistant, and registration staff. A USP800-compliant infusion-dedicated pharmacy sits adjacent to the infusion suite and is staffed by two pharmacists and three pharmacy technicians. Techs mix prescriptions on-site, and pharmacists review orders and doses and check all prepared medications.

The medical oncology clinic is staffed by three medical oncologists, each with a dedicated nurse and medical assistant, and one nurse practitioner. There are 12 exam rooms designed to accommodate the patients of four full-time physicians. When patients are referred to Spencer Cancer Center, their consult takes place in the medical oncology clinic, and a nurse navigator is dedicated to their case. Leadership is discussing the possibility of implementing a multidisciplinary clinic format in the cancer center.

Because the cancer center treats a rural patient population, travel poses a constant challenge to patients. There is minimal public transportation available to the residents of Opelika and the surrounding area, and many patients must drive 45 to 50 miles one way and some two to three hours to access services. To help patients better access cancer care, East Alabama Medical Center works with local hotels to provide patients rooms at a discount. In September, Spencer Cancer Center received a grant from the American Cancer Society's South Region to help ease this burden on patients. The grant gave the cancer center $10,000 to help patients pay for necessary transportation related to their care and treatment. The cancer center applies for this grant every year and relies on funding to help its patients receive timely care.

A Holistic Suite of Services

Spencer Cancer Center prioritizes the needs of its patients through a variety of supportive care services available free of charge. Patients with cancer can self-refer or be referred by

their care team. Two certified exercise therapists and two licensed massage therapists staff its Oncology Wellness Program. Because of COVID-19 the program is currently offering some of its services virtually. "Our two exercise therapists got very creative," says Sherer. "Some patients still had an interest in doing the program during the pandemic, so the therapists began doing both one-on-one and group exercise classes via Zoom or Microsoft Teams. We will probably continue to offer these options to patients in the future."

Other support staff include a financial navigator, a social worker, three nurse navigators, a speech pathologist, and a dietitian. The cancer center recently implemented a telephone nurse triage program in which a dedicated nurse answers patient calls, identifies symptoms, and provides direction to patients if further care is needed. Five full-time remote staff make up the cancer center's cancer registry. "Cancer registry is the heart of any cancer program," explains Sherer. "It collects all the data being reported internally and externally to state and national organizations." Leadership at Spencer Cancer Center are also looking into offering on-site genetics testing and counseling to save patients from further travel.

Co-located on the second floor of the facility with medical oncology is an on-site retail pharmacy that fills oncology and other prescriptions for patients. Nearby is a boutique that offers prosthetics, mastectomy bras, camisoles, and lymphedema sleeves as well as scarves, wigs, and now masks, giving patients a one-stop shop for their needs.

Building Formal Partnerships

To bring the most advanced treatments to east central Alabama, Spencer Cancer Center has partnered with nearby universities to participate in studies and clinical trials. For example, the cancer center is partnering with the University of Alabama in a study on survivorship care that will investigate whether the current model of survivorship care is effective in a rural setting. The cancer center is also participating in a clinical trial with Auburn University through which researchers will connect Alabama's medically underserved areas with genetic testing to find risk variants in breast, ovarian, and prostate cancers.

Spencer Cancer Center also has its own in-house clinical trial program staffed by a clinical trials coordinator. The cancer center is not able to screen all patients for clinical trial participation because it is done manually, so the coordinator focuses on patients with the center's top five disease sites: prostate, breast, lung, colon, and bladder. It offers treatment and non-treatment clinical trials, and it accrued approximately 5 percent of its patients into a clinical trial in 2019.

Spencer Cancer Center continues to grow and adapt to the needs of its community, and its staff are proud of the cutting-edge treatment and compassionate care it brings to its patients. As Chris Waits, interim director of radiation oncology at Spencer Cancer Center explains, "When patients step foot in our facility, they know that we're here to offer the best care for them."

A Community That Cares

The cancer center that East Alabama Medical Center built in 1992 and used until 2019 had only 15,400 ft^2. The oncology program was successful, but the facility had simply run out of space to provide the level of care and comfort that residents in the quickly growing region expected. When plans were announced to build a new facility, it was an easy sell for the hospital's foundation as they conducted the capital campaign for what would ultimately become Spencer Cancer Center.

The old facility was called the Cancer Center of East Alabama, and plans were to keep that name. However, when Auburn Bank President E. L. Spencer Jr. and his wife, Ruth Priester Spencer, decided to make a lead gift of $2.5 million, the hospital decided to honor the philanthropic couple by naming it the Spencer Cancer Center. The Spencers had made other notable gifts to the hospital, particularly during Mr. Spencer's 26 years of service on the East Alabama Medical Center Board of Directors. He joined the board in 1982 and served as board chairman from 1990 to 2008.

In addition to the Spencer's generous gift, the physicians, employees, and community donated another $4.6 million for a total of $7.1 million. "Obviously, the Spencer's gift was significant—the largest single gift in the hospital's history—but the complete support from throughout the East Alabama Medical Center family and community was monumental," says Chris Clark, vice president of clinical services. "Our oncology team built such a strong reputation over the years that when we said we needed help to build a better facility for our patients, the community did not hesitate to step up strong." OI

Community Oncology Can Close the Gap in Cancer Research

BY AMANDA PATTON, MA

The Research Program at Highlands Oncology Group

Though the critical role of clinical trials in advancing treatment for cancer is undisputed, increasing nationwide patient participation in cancer clinical trials remains challenging for many reasons. As knowledge of the molecular biology of many cancers grows, so do the number of trials aimed at developing targeted therapies. In the current oncology landscape, we know that trials close due to insufficient enrollment. We know that providers are asked to do more with less, that the oncology workforce is unevenly distributed across the country, and that clinician burnout is a real threat.

Despite these obstacles, we also know that cancer programs in the community are succeeding at establishing and growing access to clinical trials for their patients whether through developing research programs on-site, affiliation with academic medical centers, participation in cooperative group trials, or some combination of these approaches. This is the story of how a large independent practice in northwest Arkansas has nurtured its research program over several decades and is now able to offer patients access to phase I, II, and III trials close to home and their families.

Highlands Oncology Group At-a-Glance

Situated in the northwest corner of Arkansas, this freestanding cancer center employs multispecialty providers and operates four clinical sites. With a total staff of 450, the practice sees nearly 6000 patients annually. Highlands Oncology Group staff include 11 medical oncologists, three radiation oncologists, two supportive care physicians, five surgeons, 52 registered nurses, four oncology pharmacists, one genetic counselor, four social workers, two physical therapists, and two massage therapists. Since 1999

All new patients, as well as patients who have new scans or new pathology, are screened for clinical trial eligibility at Highlands Oncology Group.

Highlands Oncology Group has operated The Center for Chest Care in its Fayetteville location. With a high incidence of lung cancer in the region, three local physicians established The Center for Chest Care with a goal of improving on the diagnosis and treatment of cancers in the lung and chest employing a multidisciplinary approach to diagnosis and care. Working together, they developed a community-based, multidisciplinary thoracic cancer clinic—unique in the United States at that time. In 2011, Highlands Oncology Group opened a 50,000-square-foot facility in Rogers, equipped with 40 infusion chairs and 24 exam rooms.

As the group continued to grow, in 2015 surgical oncology services (i.e., gynecologic and colorectal surgeons) were added in a new site in Fayetteville.

Most recently, in August 2020, Highlands Oncology Group realized a long-time goal of consolidating many of its services into a new 125,000-square-foot facility in Springdale, which includes 48 infusion chairs and 34 exam rooms. Importantly, the new building brings the Highlands Oncology Group Research Program together under one roof in one location.

Highlands Oncology Group Medical Director of Research J. Thaddeus Beck, MD, FACP.

Planting the Seeds

Turn back the clock to 1996, when the story of the practice and its research program begins. Highlands Oncology Group was established that year by three medical oncologists, J. Thaddeus Beck, MD; Daniel Bradford, MD; and Malcolm Hayward, MD.

Dr. Beck came to the practice from a staff position at the University of Arkansas Medical Center, having previously completed a fellowship in hematology/oncology at Duke University Medical School. In the process of being recruited to the Highlands Oncology Group, Dr. Beck mentioned his interest in continuing to engage in clinical trials through SWOG, the cooperative group in which the University of Arkansas research program participated. His partners agreed but suggested that research could be something Dr. Beck might pursue in addition to his other clinical responsibilities.

As Dr. Beck recalls, the Highlands Oncology Group Research Program started without any funding for staff. "We actually partnered with the hospital to hire a single staff person, and we managed to open some trials and completed them." The partnership with the hospital only lasted for one year, but the practice's fledgling research program persevered, first adding some industry trials in conjunction with contract research organizations and, ultimately, working directly with industry on trial participation. After more than 20 years of commitment to offering clinical trials in the community, the research program at Highlands Oncology Group is now able to offer more than 45 phase I, II, and III trials across all cancer types. "We still do SWOG trials and other NCI [National Cancer Institute] trials through the CTSU [Cancer Trials Support Unit], and also a large volume of industry-sponsored trials," said Dr. Beck.

Nurturing Research in the Community

For more than two decades, Dr. Beck has championed clinical research at his cancer program driven by the knowledge that "it's how we change cancer care." Over the years, patients in his community have benefited from having access to cancer treatment trials close to home.

"If you don't have those options in your community, then there is nothing for patients to do," said Dr. Beck. "If you live in northwestern Arkansas where it's five hours from St. Louis, four hours from Kansas City, three hours from Oklahoma City, five hours from Dallas, and three-and-a-half hours to Little Rock, you have great barriers to participation in clinical trials that are university based. You need community-based research for these patients."

Providers in the community often benefit from having strong, established relationships. One reason for the success of the research program at Highlands, Dr. Beck believes, is the practice's ties to the community it serves. "Our patients all live here in our community. I can open a trial in the morning, go through our list of patients whom we've previously identified, call them up, and they'll come in the afternoon and register for the trial, which is hard to do at a tertiary center where patients have to fly in and travel to be seen and evaluated. For all these reasons, we've worked hard to keep clinical trials available in our community."

Most patients with cancer receive their care in the community, close to family and friends. "If you want to double or triple national enrollments, you have to have community participation, especially in phase I trials where the visits might be daily for a week and weekly for a month," said Dr. Beck. "If you want to break down barriers within eligibility criteria, at some point you have to have phase I trials, which probably have the least barriers due to eligibility criteria," asserts Dr. Beck.

Despite the COVID-19 pandemic, the Highlands Oncology Group Research Program managed to stay close to its schedule for transitioning to new offices in Springdale, Ark., in late August 2020. The move culminated more than five years of planning. Previously, the research staff were spread out in three locations. Clinical trial patients were seen in two facilities and regulatory and data management staff were in a third building. With this move, the research program is now in one location (Figure 1, page 29).

Figure 1. Staffing a Community-Based Research Program

As of August 2020, the following staff comprise the Highlands Oncology Group Research Program:

Medical Director of Research
J. Thaddeus Beck, MD, FACP

Director of Research
Helen Holtzen, RN, MS

1 Research Manager
Meagan Higginbotham, BS

1 Research Secretary

Principal Investigators
Thaddeus Beck, MD, FACP
Eric Schaefer, MD
Patrick Travis, MD
(All practice medical oncologists serve as sub-investigators)

1 Clinical Research Supervisor
Adam Torres, RN, BSN, BSBA

8 Full-Time Clinical Research Coordinators

1 Part-Time Clinical Research Coordinator

2 Research Medical Assistants

3 Research Regulatory Coordinators

1 Data Manager Supervisor
Curtis Randolph, EdD, LTL, CCRP

3 Research Data Managers

Screening and Enrolling Patients

All new patients, as well as patients who have new scans or new pathology, are screened for clinical trial eligibility at Highlands Oncology Group. Patients are screened the day before their clinic visit. The practice has integrated OncoTrials with its OncoEMR platform to assist with the screening process; however, the clinical research coordinators also manually screen patients, and physicians may identify patients they believe to be candidates for a clinical study and contact the research program staff directly. Highlands continues to be proactive in exploring technological solutions to streamline trial screening processes. For example, previously, Highlands Oncology Group conducted a study comparing the Watson for Clinical Trial Matching system with manual screening for trial eligibility.[1]

Under the current screening process, patients' charts are flagged in the electronic medical record if they may be appropriate for a specific clinical study. Providers see the flag and know that their patient has been screened. If time permits, physicians may speak with the study's clinical research coordinator about a specific trial before the patient visit. The Research Department also maintains an open protocol list for physicians to reference that includes bullet points with key information on eligibility inclusion or exclusion criteria. This list is updated weekly. During the patient visit, the flag alert prompts the provider to respond on whether to continue with the trial enrollment process or not.

The enrollment process has six basic steps:

1. The patient expresses to their physician an interest in a specific clinical trial.
2. The study coordinator provides an informed consent form and visits with the patient to discuss and encourages the patient to take the form home and review it.

Highlands Oncology Group Research Department Staff.

Top: Light-filled Infusion Center at Highlands Oncology Group. Bottom: Parkway Cancer Center skyline.

In August 2020, Highlands Oncology Groups Medical Research program moved to one central location in the Parkway Cancer Center.

3. If the patient consents to the study, the screening process is scheduled.
4. The screening data are reviewed by the principal investigator to determine eligibility.
5. If eligible, the patient is enrolled in the clinical trial and treatment is scheduled.
6. The protocol's schedule of events is initiated.

Research Program Director Helen Holtzen, MS, RN, says that the practice accrues about 4 percent of its patients to clinical trials annually, and it is rare for a patient to have no interest in clinical trials.

Cancer clinical studies are requiring increasing involvement across disciplines, notes Clinical Research Supervisor Adam Torres, RN, BSN, BSBA. In this regard, the Highlands Oncology Group Research Program benefits from the practice's relationships in the community, he said. Although, as a multispecialty group, the practice is able to perform many of the tests needed for clinical trial participation in-house—for example, radiology and labs—"more and more studies these days are requiring ophthalmology exams, dermatology exams … we even had a study that required an audiologist," he said. "We are very active in our community and have great partners."

Building a Culture of Research

One step that Highlands Oncology Group has taken that supports a culture of research is agreement among practice providers to subspecialize, said Dr. Beck. As mentioned previously, for more than 20 years, Highlands Oncology Group has held a multidisciplinary thoracic clinic through The Chest Center. Pulmonologists, surgeons, radiation oncologists, and medical oncologists meet to evaluate new cases, "get them properly staged and determine the best treatment," said Dr. Beck. "In that setting it's very easy to have clinical trials based around thoracic oncology and everyone is excited to have cutting-edge care available."

The practice instituted the same multidisciplinary approach for breast cancer. "For 25 years we've had a multidisciplinary breast conference (a clinic without walls) every Thursday morning at 6:30 a.m.," Dr. Beck said. The conference brings together all of the stakeholders in breast care to review cases, and the venue is the ideal for keeping everyone updated on available new clinical trials. "We can enroll patients on neoadjuvant clinical trials through that education process within that conference. It can move very quickly when [all of the stakeholders] know that there is a clinical trial for BRCA-mutated triple negative breast cancer."

In this way, Highlands Oncology Group's Research Program complements the collaboration among these providers and extends access to clinical trials.

"I know that for whatever reason our area is unique," Dr. Beck said. "You seldom find physicians from different specialties collaborating on patient care, but when you see it happen and be successful then it begets the process again for another subspecialty conference. It may start out as a conference and turn into a clinic. And there's advantages for all the providers in that it's just more efficient. Highlands has created the collaboration by providing the infrastructure to make it work. We've been so driven to make it happen that we've broken down the barriers [with the infrastructure and staff] to make it happen ourselves."

All Together Now

With the research staff together in one location, the Highlands Oncology Group continues to strengthen its commitment to a community-based research program. "We've set up our desk areas so that all the data managers are together, all the study coordinators are together, all the regulatory [staff] are together," said Helen Holtzen, MS, RN. "Everyone worked so hard to make this move successful, and it was important to champion that with the staff." The physical proximity enhances communication and "now we're training a new clinical research coordinator. She's been able to go around to each individual and spend time—from the research business manager on up—to see everyone's piece in how we get this clinical trial from signing the [confidential disclosure agreement] to the close-out visits. It's so much easier [for new staff] to get a picture of how a clinical trial works."

In addition to the new facility, the research program staff now includes a dedicated research advanced practice registered nurse (APRN) who will work closely with the physician team. In this role, she will see study patients for visits that do not require an MD. The APRN will oversee lab results for all clinical trial patients, and the APRN will be highly involved in monitoring and managing patient adverse events and seeing patients who may need an acute visit for an adverse event, further improving continuity of care.

For other community cancer programs looking to build a similar research program, Dr. Beck encourages the commitment. "I hope that more practices will try to have a robust clinical trials program. It's work, but it's professionally satisfying and it's good for patients." OI

Amanda Patton, MA, is a freelance healthcare writer. She worked as a senior writer and editor for the Association of Community Cancer Centers for more than 15 years.

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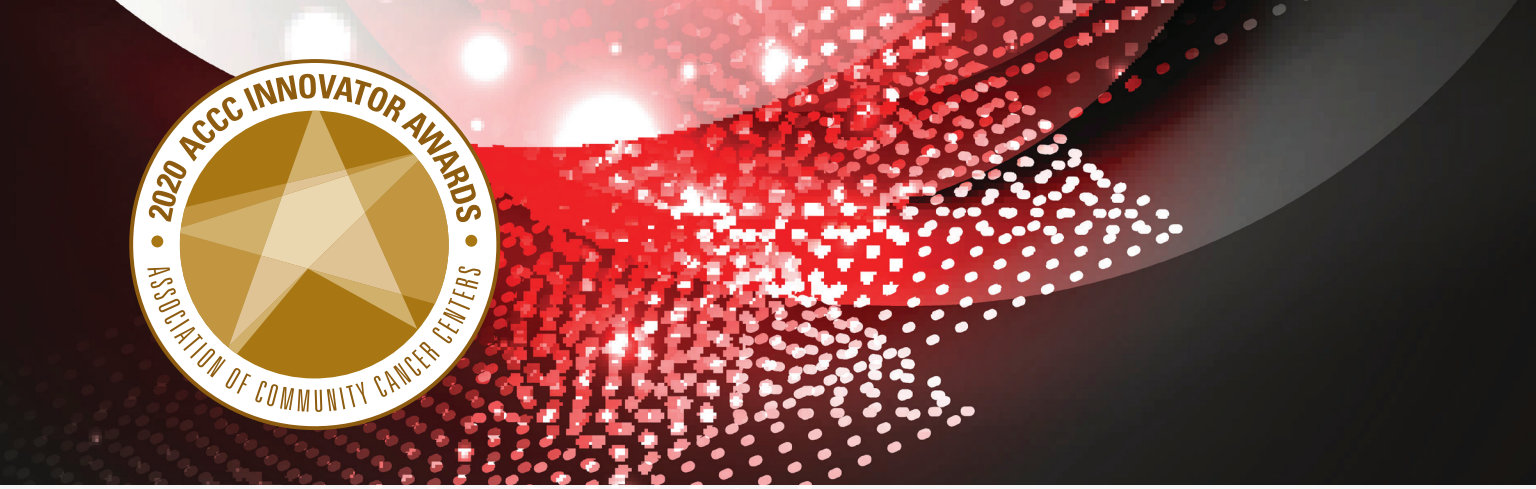
Arkansas by the Numbers

Fayetteville, population 87,590 (per 2019 census estimate[2]), is the third largest city in Arkansas. Located in the northwest corner of the state in the Ozark Mountains, Fayetteville is home to the flagship campus of the University of Arkansas.

Cancer is the second leading cause of death in Arkansas. In 2020 the American Cancer Society estimates that 17,200 Arkansans will be diagnosed with cancer and 6730 individuals will die from the disease. Cancer of the lung and bronchus is expected to remain the leading newly diagnosed cancer in 2020, followed by breast, prostate, colorectal, and kidney/renal cancers.[3]

According to the most recent statistics, Arkansas is among the five states with the highest age-adjusted lung cancer death rates per 100,000. These states are Kentucky (53.5), West Virginia (50.8), Mississippi (49.6), Arkansas (47.4), and Oklahoma (46.8). In 2018 the age-adjusted lung cancer death rate in the United States was 34.8 per 100,000.[4]



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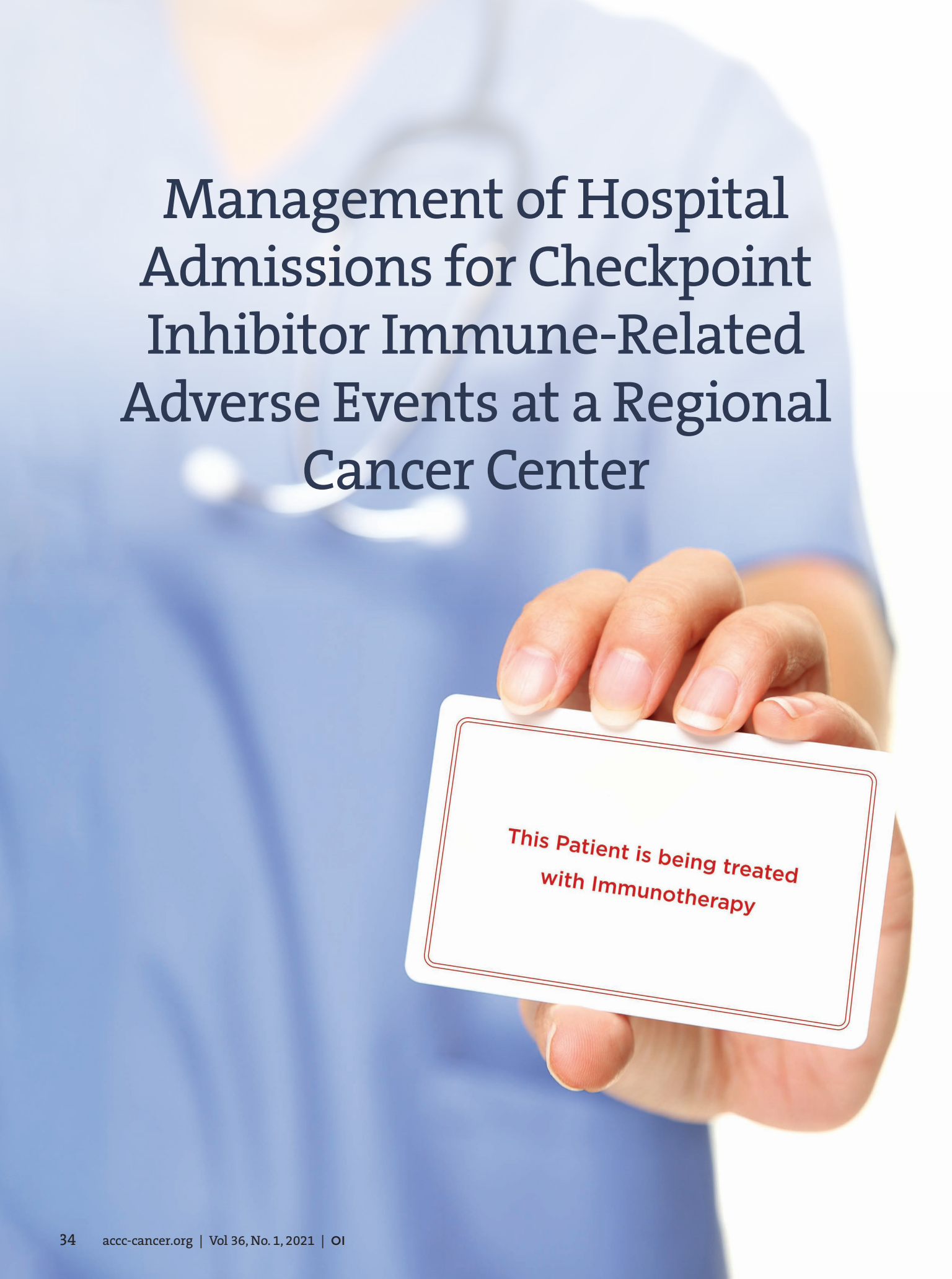

BY ANDREW LI, PHARMD, AND MICHELA ALTERGOTT, PHARMD

In Brief

The use of immune checkpoint inhibitors in oncology has surged over the past decade and is projected to continue increasing for years to come. With the forecasted rise of immunotherapy use, it is now more important than ever to ensure the safety of patients who are receiving these agents. The toxicity profiles of immunotherapy agents are vastly different from traditional cytotoxic chemotherapies. Immune-related adverse events (irAEs) can lead to life-threatening outcomes if not treated appropriately. Incidence of severe irAEs (grade 3 or 4, which may require hospitalization) varies across publications, and minimal data are available to indicate what percentage of hospital admissions of immunotherapy-treated patients are due to irAEs. Determining this figure may clarify the actual hospitalization burden of irAEs on hospital systems. In addition, evaluating health systems' clinical management of irAEs can uncover areas of improvement in quality of care for immunotherapy treated patients. In June 2018, the National Comprehensive Cancer Network (NCCN) and American Society of Clinical Oncology (ASCO) released guidelines on the management of irAEs. St. Luke's Health System used these guidelines to evaluate where the health system consistently met these benchmarks and identify areas of improvement.

The global cancer immunotherapy market is expected to grow from $61.9 billion in 2016 to $119.39 billion by 2021.[1] Much of this growth is due to immunotherapy's ability to create durable anti-tumor responses and the wide versatility of indications ranging from various solid tumors to hematologic cancers, with new indications continuing to be approved.[2,3] Immunotherapy can over-activate T-cell function and result in immune-related adverse events. These irAEs most commonly occur in the following organ systems with respective presentations:

- Skin (dermatitis)
- Gastrointestinal tract (colitis)
- Lungs (pneumonitis)
- Liver (hepatitis)
- Endocrine system (thyroiditis or hypophysitis).

Early detection and treatment with corticosteroids are essential to limiting the severity and duration of these irAEs.[4] If untreated, high-grade irAEs can lead to severe complications and sometimes fatal outcomes.

Massachusetts General Hospital reported that the number of inpatient admissions tied to severe irAEs rose threefold over five years.[5] With the widespread use of immunotherapy over the last decade, institutions may not be inclined to recognize irAEs. Moreover, emergency medicine and internal medicine practitioners may be the first providers to encounter patients experiencing an irAE and may not be aware that irAEs differ vastly in their toxicity profile compared to traditional cytotoxic chemotherapies. Not only do these adverse events also manifest much later (months after treatment initiation) compared to traditional cytotoxic agents, the specific organ systems in which these adverse events take place differ as well.[6]

Another complicating factor is that irAE incidence rates leading to an emergency department (ED) or inpatient admission have yet to be identified. Incidences of all grades of irAEs widely range from 15 to 90 percent across different studies; the rate of severe irAEs requiring corticosteroids and withdrawal of immunotherapy ranges from 0.5 to 13 percent.[7] Though minimal data exist to indicate what proportion of all immunotherapy-treated patients are admitted to the hospital due to irAEs, determining this percentage would help clarify the hospitalization burden that irAEs put on a health system.

In addition, evaluating a health system's clinical management of these adverse events will identify opportunities to improve the treatment of these patients. At St. Luke's Health System, we have a multitude of ED and hospital sites that vary geographically from urban to rural areas. These facilities are frequently on the front line of examining patients experiencing a severe irAE. Gauging our performance across sites will also allow St. Luke's Health System to discover areas for improvement in the system, as well as for each individual site. Our team at St. Luke's Health System used NCCN and ASCO guidelines on the management of irAEs to identify the standard of care and then evaluate benchmarks met and areas for improvement.[7,8]

Our Study

Our initial goal was to ascertain the overall rate of ED visits and inpatient hospitalizations due to irAEs. A second goal was created to establish a tool to evaluate the health system's performance in the clinical management of irAEs. The results of this evaluation are intended to identify areas of improvement and then create educational initiatives to address these areas throughout the entire health system.

The first step was to conduct a clinical review of all immunotherapy-treated patients who were admitted to a St. Luke's Health System ED or inpatient facility from March 2017 to March 2018. Specifically, we did a retrospective chart review on patients who received a dose of immunotherapy between March 2016 and March 2018 with any of the following agents:

- Ipilimumab
- Atezolizumab
- Nivolumab
- Avelumab
- Pembrolizumab
- Durvalumab.

Patients who experienced an irAE-related ED or inpatient admission between March 2017 and March 2018 were then included as part of the analysis. IrAEs have been documented to occur even a year after the last dose of immunotherapy.[9] Therefore, extending this two-year time window allows adequate capture of all patients who experienced an irAE over a one-year period. Next, we evaluated interventions made during the treatment phase and after the diagnosis was confirmed. Metrics for evaluation included the presence of a medical oncology consult and appropriate medication management administered in the correct dose and timing.

ED and inpatient admissions were determined to be associated with an irAE if the diagnosing physician explicitly stated diagnosis of an irAE in electronic health record documentation. However, if in a future encounter the patient's symptoms are diagnosed as an irAE but in the initial encounter they were not, both encounters are still associated with an irAE diagnosis. For example, a patient on immunotherapy is admitted to the ED for severe diarrhea and the physician incorrectly associates the diarrhea with food poisoning; the patient is discharged after parenteral hydration. Later, the patient is re-admitted to the ED with worsening diarrhea. Medical oncology is consulted this time, and the consulting oncologist diagnoses the patient with irAE-related colitis. Both the initial and subsequent ED encounters are considered irAE-related.

The following baseline information was recorded from patients who experienced an irAE:

1. Date of admission
2. Length of stay (if an inpatient admission)
3. Immunotherapy agent(s) used
4. Malignancy
5. irAE type and grade
6. Admission location region (rural or urban).

Grading an irAE was estimated by comparing the symptoms recorded in the electronic health record documentation and/or lab values at the time of the encounter, along with the grading system of irAEs outlined in NCCN and ASCO guidelines.[7,8] Each irAE admission was then evaluated with the following evaluation criteria that were constructed from ASCO and NCCN guidelines:[7,8]

1. Was there a medical oncology consultation?
2. Were corticosteroids given at the appropriate dose (within 10 percent of the recommended dose)?
3. Post-discharge, were corticosteroids properly tapered over a greater than four-week period?
4. If the patient was evident to have steroid-refractory disease, was a secondary agent administered at the appropriate time frame?
5. If additional adjunct medications were appropriate in the management of the irAE, was it administered at the appropriate dose and timing?

In cases where patients are not demonstrating adequate responses to corticosteroids alone after 48 to 72 hours, a secondary immu-

Table 1. Secondary Agents

irAE	Clinical Scenario	Secondary Agent
Colitis	G2-G3: If symptoms persist for three to five days or recur after improvement with steroids	Infliximab
	Refractory to infliximab or contraindication to TNF-alpha blocker	Vedolizumab
Hepatitis	G3-G4: Corticosteroid refractory or no improvement after three days	Mycophenolate Mofetil
	G3: Corticosteroid refractory or no improvement after three days	Azathioprine
Pneumonitis	G3-G4: No improvement after corticosteroid use for 48 hours	Infliximab Mycophenolate Mofetil IVIG Cyclophosphamide

Notes: G2 = Grade 2; G3 = Grade 3; G4 = Grade 4; IVIG = Intravenous immunoglobulin.

Table 2. Adjunct Agents

irAE and Grade	Adjunct Agent
Colitis (G2-G3)	Topical emollients Oral histamines Topical corticosteroids
Colitis (G2)	Loperamide for consideration
Pneumonitis (G2-G4)	Empirical antibiotics for consideration in G2 Definite empirical antibiotics in G3-G4

Notes: G2 = Grade 2; G3 = Grade 3; G4 = Grade 4

Immunotherapy is an oncology-based drug class, which has become relevant to other disciplines, such as internal medicine, critical care, and emergency medicine.

nosuppressive agent may be used to assist in controlling irAE symptoms. Unlike corticosteroids, which are universal to most irAEs, secondary agents are distinct in their use with particular irAEs. Table 1, page 37, identifies the different secondary agents that can be used for various irAEs. In certain grades of severity, the irAE guidelines recommend non-immunosuppressive supportive care agents or antibiotics that may aid in the care of the irAE, alongside immunosuppressive agents. Table 2, page 37, identifies the adjunct agents that can be used for different irAEs.

Our Results

Using a computer algorithm to detect patients who met the established criteria, 295 patients were identified. After retrospective chart review of all 295 patients, 13 unique patients underwent 16 ED or inpatient admissions due to irAEs, which resulted in a hospitalization rate of 4.4 percent (Table 3, page 38).

Of the 16 total encounters, an irAE diagnosis was missed in 6 ED admissions. In all 6 cases, there was no medical oncology consult and 5 out of the 6 cases were located at rural sites. These encounters were determined to be an irAE in one of two ways: (1) the patient was re-admitted to the cancer center for recurrent symptoms and (2) during a clinic visit, an oncologist attributed the symptoms to an irAE, despite the ED provider assigning the symptoms to another cause.

Of the 16 cases, 10 of which were correctly diagnosed, there were 40 possible actions where an irAE could have been managed appropriately. Not every category listed in Table 3 is applicable for every case. For example, a patient managed adequately on corticosteroids alone would not need a secondary agent; therefore, that category would not apply to that patient. In the mis-diagnosed cases, the only applicable action was a medical oncology consult.

Out of 40 possible actions, 24 (60 percent) were fulfilled. The remaining 16 opportunities for improvement are shown in Table 4, page 39.

The two most significant areas of improvement with the most instances are no medical oncology consult done and the under-dosing of steroids (greater than 10 percent discrepancy), with other areas having less frequency (Table 5, page 39).

(continued on page 39)

Table 3. Evaluation of irAE Encounters

Encounter	Patient	Agent(s)	Malignancy	irAE and Grade	Area	Admission	Consult	Dosing	Schedule	Secondary Agent	Adjunct Agent
1*	1	Nivolumab	Pancreatic adenocarcinoma	G2 Myositis	Urban	ED	✗				
2*	2	Nivolumab/ Ipilimumab	Melanoma	G3-G4 Guillain-Barre syndrome	Rural	ED	✗				
3*	3	Pembrolizumab	NSCLC	G2 Colitis	Rural	ED	✗				
4*	4	Nivolumab	Melanoma	G2 Colitis	Rural	ED	✗				
5*	5	Nivolumab	Cholangiocarcinoma	G2 Colitis	Rural	ED	✗				
6*	6	Nivolumab/ Ipilimumab	Melanoma	G2 Colitis	Rural	ED	✗				
7	7	Ipilimumab	Melanoma	G3 Colitis	Rural	Inpatient	✓	✗	✓	✗	
8	8	Durvalumab	NSCLC	G2 Pneumonitis	Urban	ED	✗	✗	✗		
9	9	Durvalumab	NSCLC	G4 Pneumonitis	Rural	Inpatient	✓	✓		✗	✓
10	10	Nivolumab	NSCLC	G3 Colitis and G3 pneumonitis	Urban	Inpatient	✓	✓	✓		✓
11	11	Nivolumab	Melanoma	G4 Colitis	Urban	Inpatient	✓	✗		✓	
12	12	Nivolumab/ Ipilimumab	Melanoma	G3 Colitis	Urban	ED	✓	✓	✓		
13	13	Ipilimumab	Melanoma	G2 Peripheral neuropathy	Rural	Inpatient	✓	✓	✓		✓
14	2	Nivolumab/ Ipilimumab	Melanoma	G3-G4 Guillain-Barre syndrome	Rural	ED	✓	✗	✓		✗
15	4	Nivolumab	Melanoma	G3 Colitis and G2 hepatitis	Rural	Inpatient	✓	✓	✓		
16	5	Nivolumab	Cholangiocarcinoma	G3 Nephritis and G1 colitis	Rural	Inpatient	✓	✗			

Notes: G2 = Grade 2; G3 = Grade 3; G4 = Grade 4; NSCLC = non-small cell lung carcinoma.

* In this encounter, the diagnosis of an irAE was incorrectly missed, but it is still affiliated with an irAE due to a subsequent encounter eventually obtaining the accurate diagnosis.

✓ In this encounter, the irAE event was eligible for this category of intervention and the action was fulfilled.

✗ In this encounter, the irAE event was eligible for this category of intervention and the action was **not** fulfilled.

☐ In this encounter, the irAE event was **not** eligible for this category of intervention.

In light of this analysis, we revised St. Luke's Health System's immunotherapy patient handout to add a section on irAEs, including details on possible symptoms and when to contact the clinic for further workup.

Table 4. Areas of Improvement

Area of Improvement	Number of Occurrences
No medical oncology consult	7
Under-dosing of corticosteroids	5
Secondary medication not given at appropriate time	2
Neglect to taper steroids	1
Wrong timing of adjunct medication	1
Total	**16**

(continued from page 37)

Exploratory Outcomes

Two additional outcomes were evaluated: (1) 30-day mortality post-admission and (2) median length of stay (for inpatient admissions).

Out of the 13 unique patients who experienced institutional encounters for severe irAEs, 5 died within 30 days of admission. Two of these patients died due to disease progression, and the remaining three patients' cause of death was a severe irAE. Two of the irAE-related deaths were gastrointestinal related (severe bowel obstruction and bowel necrosis), and the third irAE-related death was due to severe pulmonary pneumonitis progressing into fibrosis and respiratory failure. Therefore, the irAE-related mortality rate at St. Luke's Health System is 1 percent. All three patients with irAE-related deaths were under-dosed corticosteroids, ranging from 20 to 38 percent. Two of these patients were eligible to use a secondary agent, but none was used. Although there was potential for improvement in the management of these patients, it is difficult to predict whether adequate corticosteroid use and a secondary agent could have prevented these deaths, due to the severity of their irAE conditions.

The median length of stay for inpatient admissions was four days.

Lessons Learned

Immunotherapy is an oncology-based drug class, which has become relevant to other disciplines, such as internal medicine, critical care, and emergency medicine. At St. Luke's Health System, we have a low irAE-related ED and inpatient admission rate of 4.4 percent. This could be due to several factors; for example, the reporting incidence of severe irAEs has been low, showing that our incidence is consistent in the range reported in previous

Table 5. Incidence of Under-Dosing

Encounter	Patient	Diagnosis	Admission	Expected	Administered	% Discrepancy
7	**7**	G3 Colitis	Inpatient	100 mg	80 mg	20%
9	**9**	G2 Pneumonitis	ED	80 mg	50 mg	38%
11	**11**	G4 Colitis	Inpatient	100 mg	75 mg	25%
14	**2**	G3-4 Guillain-Barre syndrome	Inpatient	200 mg	120 mg	40%
16	**5**	G3 Nephritis and G1 colitis	Inpatient	100 mg	60 mg	40%

Dosing was based on prednisone or prednisone equivalents.

literature.[7] Another possibility is that a proportion of irAEs at our institutions are being adequately managed in the outpatient setting, therefore preventing the need for ED or inpatient care.

However, our study revealed several areas or improvement that we can address when patients are admitted to the ED or inpatient setting for irAEs. Firstly, there have been incidents where the emergency medicine provider does not consider an irAE as part of the diagnostic differential when seeing an patient with an irAE. In all of these incidents, there was no medical oncology consult. Therefore, education on irAEs should be provided to emergency department physicians and patients to increase awareness and improve accuracy in correct irAE diagnosis. In light of this analysis, we revised St. Luke's Health System's immunotherapy patient handout to add a section on irAEs, including details on possible symptoms and when to contact the clinic for further workup. In addition, we provided a brief education session during our System Emergency Medicine Meeting to spread teaching materials across multiple practicing groups, which include rural emergency medicine providers. At this meeting providers were also encouraged to consult our on-call medical oncologist whenever a patient has a history of immunotherapy treatment and presents unfamiliar symptoms. A consult in all of these cases may likely have improved accuracy in diagnoses.

For numerous reasons, irAEs can be especially difficult to diagnose. Symptoms of irAEs can be confounded with various other differential diagnoses. For example, non-specific symptoms such as nausea, malaise, and diarrhea resulting from colitis may easily be assigned to another cause in a medically complex patient. Although irAEs commonly occur at certain organ systems, it is possible that they can reach any organ system, making the challenge of accurately diagnosing these events even more difficult. This is evidenced by several of our patients experiencing the rarer irAEs (Guillain-Barre syndrome, nephritis, etc.). Lastly, irAEs can occur even up to a year after discontinuation of therapy.[9] Therefore, the risk of an irAE continues to exist when patients have not been receiving therapy for an extended period of time. Because the physician doing the initial patient evaluation may not even consider immunotherapy as a cause, it is crucial for the medical oncologist to participate in the continued care of a patient with a history of immunotherapy.

Accurate diagnosis could prevent re-admissions. After one patient was misdiagnosed on their first ED admission (encounter 2), the patient was re-admitted to the ED (encounter 14). Other patients were also misdiagnosed after their initial ED visits (encounters 4 and 5) and were later re-admitted to the inpatient setting (encounters 15 and 16). Therefore, correct diagnosis on the first encounter would avert subsequent encounters.

The second area to address is the adequate dosing of corticosteroids. One possible barrier to proper dosing is that this large prednisone dosage (1 mg/kg/day) is atypical and does not match other methods of dosing. Other indications for corticosteroids (e.g., chronic obstructive pulmonary disease) have set doses of lower strengths, so these errors could have resulted from incorrect extrapolation from other indications. The second source of errors is the particularly high doses of corticosteroids. For example, for Guillain-Barre syndrome, the recommended dosage starts at 2 mg/kg/day of methylprednisolone,[6] which is 2.5 mg/kg/day of prednisone and considerably higher than the typical 1 mg/kg/day. Proper education and diligent referral to the NCCN/ASCO guidelines will eliminate these errors.

Several members of the healthcare team can ensure that this proper dosing is done, including pharmacists, internal medicine physicians or emergency medicine physicians seeing patients, and consulting oncologists. To improve patient care at our institution, we distributed our study results, as well as instruction on the management of irAEs. Adequate corticosteroid dosing and proper use of secondary agents were the emphasized areas of improvement. This information was distributed via the internal medicine newsletter for internal medicine physicians, via the Pharmacy Grand Rounds Conferences for inpatient pharmacists, and to the cancer institute's medical director for medical oncologists.

Education on irAEs is necessary to increase awareness and improve accuracy in the diagnosis of irAEs for emergency department physicians. Education to inpatient oncology practitioners will help to ensure proper corticosteroid dosing and use of secondary agents in the management of irAEs.

Future Directions

In addition to educating patients and healthcare practitioners, further steps may be taken to ensure awareness and proper care of irAEs. Wallet cards that detail patients' immunotherapy regimens can help bring an irAE to the attention of an emergency medicine provider and aid in the diagnostic process. The Association of Community Cancer Centers developed an IO Wallet Card (Figure 1, page 41) and made it available as a print-ready PDF at accc-cancer.org/io-walletcard. (Limited print quantities are available. Please contact Janelle Schrag, jschrag@accc-cancer.org for these and other inquiries.) Electronic health record alerts that notify a non-oncology-based provider of patients' immunotherapy regimens could also increase awareness of a possible irAE during an admission. Lastly, an order set specifically designed for the treatment of irAEs could ensure the adequate dosing of corticosteroids and provide options of secondary agents for corticosteroid-refractory situations. OI

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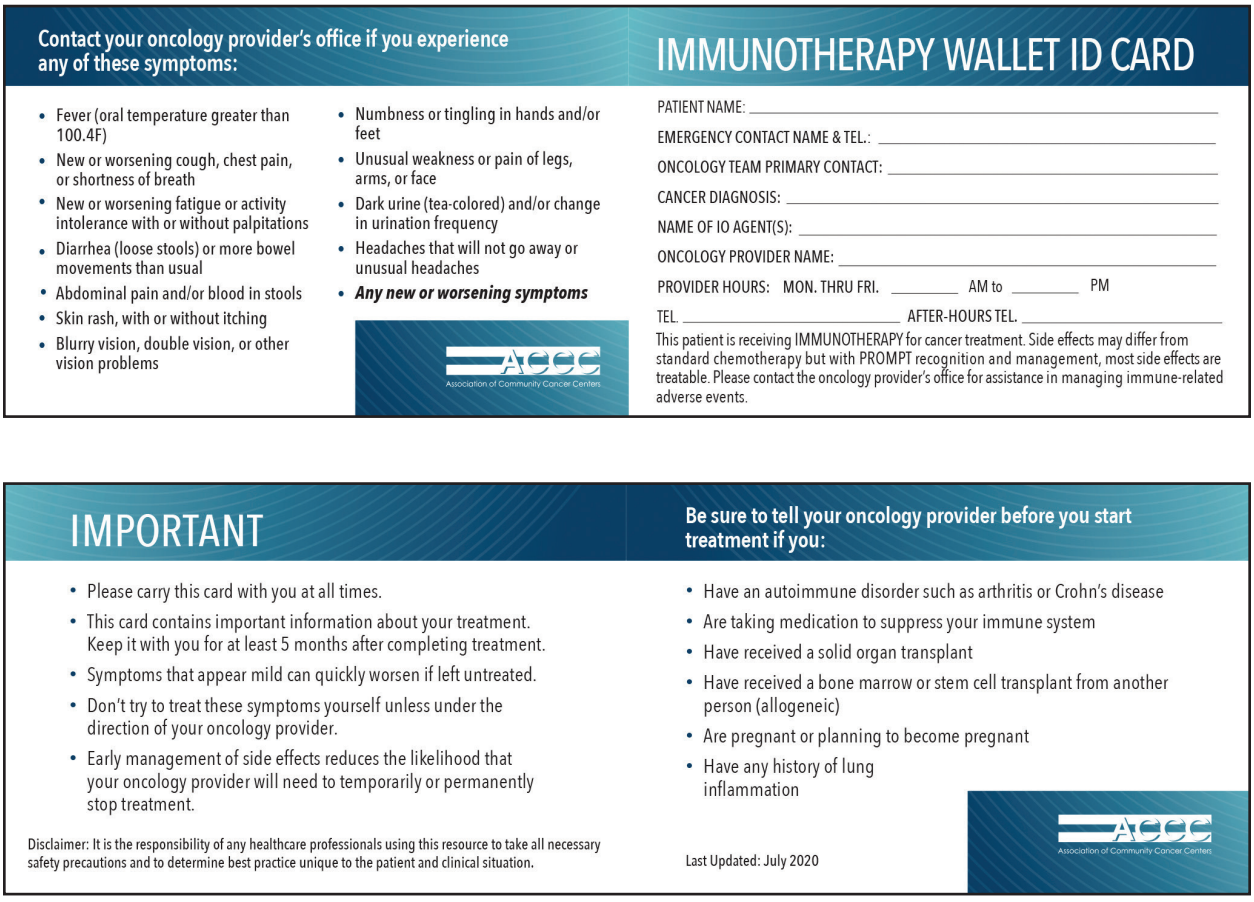
Figure 1. Immunotherapy Wallet ID Card



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Avoidable and Unavoidable ER Utilization by Cancer Patients on Systemic Therapy

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Emergency room (ER) utilization is common among patients with cancer and is associated with higher acuity visits and increased resource utilization.[1] Prior studies suggest rates of ER utilization between 6 and 83 percent, and up to 37 percent of people make multiple visits while on treatment.[2-7] This utilization exceeds that for the underlying population and also exceeds the rates of patients with cancer who are not on systemic therapy.[3,4,8] In addition, patients with cancer and those who are on treatment are frequently admitted to the hospital,[6] and the ER is a common mechanism used for admission. Population-based studies regarding patients within the first year of a cancer diagnosis demonstrate that as many as 50 to 70 percent of patients seen in the ER are admitted to the hospital.[5,9] ER evaluations add costs to care and more than 50 percent of ER visits by patients with cancer may be avoidable.[10-12]

In the current transition to value-based care, avoidable ER utilization represents an opportunity for healthcare system cost savings, but difficulties remain in determining what visits are and are not avoidable based on coding and billing data alone.[13-16] Recently, the Centers for Medicare & Medicaid Services (CMS) implemented the quality measure CMS OP-35, which measures one or more ER visits or inpatient admissions for anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis within 30 days of chemotherapy treatment.[17] Data will be available to the public on the CMS hospital compare website for review.[18]

In all, ER utilization among patients with cancer and who are on systemic therapy remains understudied and a variable with regard to data source, design, patient populations, and intention.[8] Population-based studies or those obtained solely with administrative data—for example, coding and billing data—may lack granular detail and sometimes accuracy regarding the potential myriad of factors affecting both patients and providers, including those patients presenting to an ER or elsewhere for care.[14,15] Furthermore, most institution-specific observational studies are from academic or tertiary referral centers, whose patients may have potentially significant differences compared to patients receiving care in a community cancer center.[19,20]

In this study, we sought to comprehensively evaluate both avoidable and unavoidable ER utilization among patients receiving care in a comprehensive community cancer center.

Twenty-four-hour access to nurse communication regarding toxicity management is available via a phone triage system staffed with cancer center nurses after hours and former ER nurses during the regular workday.

Our Methods

The Goshen Center for Cancer Care is a community-based comprehensive cancer program staffed with subspecialty physicians in surgical, radiation, and medical oncology. In addition, support personnel form an integrated care team and include naturopathic physicians, dietitians, mind and body counselors, and financial counselors who are available to patients throughout their cancer treatment and beyond. Patients starting systemic therapy are discussed in a multidisciplinary conference aimed to coordinate care and identify support needs. Patients also are encouraged to attend a chemotherapy orientation class where they receive educational materials and contact information for various services. Many patients receive specific regimen-based education regarding toxicities of treatment from dedicated advanced care practitioners within medical oncology. Twenty-four-hour access to nurse communication regarding toxicity management is available via a phone triage system staffed with cancer center nurses after hours and former ER nurses during the regular workday.

For this study, we identified sequential patients on systemic therapy (exclusive of endocrine therapy) through our electronic health record between April 1 and June 30, 2019. Retrospective data collection included demographic variables, education status, pre-treatment education and support, cancer type, and treatment variables, as well as performance status and presence of the comorbidities of interest (see Table 1, page 45). We documented patient complaints while on systemic therapy, as well as recommendations from cancer center staff. ER utilization was identified from the electronic health record for that same time period (April 1-July 31, 2019). Independent physicians conducted a clinical review of medical records to assess whether these ER visits would be considered avoidable or unavoidable in accordance with the classification proposed by Billings et al.[21]:

- Non-emergent
- Emergent but amenable to primary care management
- Emergent but preventable with prior management (all avoidable visits)
- Emergent and not preventable (unavoidable visits).

Dates of death (where applicable) were identified up to April 30, 2020.

We compared groups with and without ER utilization during the specified time interval and groups of avoidable ER utilization to the remainder of the cohort inclusive of all variables listed in Table 1. In an exploratory analysis conducted due to small numbers, we evaluated groups with avoidable versus unavoidable ER utilization. Where appropriate, we conducted univariate analyses with Fisher's exact test, Pearson's chi-square test, two-sided *t* tests, and the Goodman-Kruskal's gamma test. Independent variables of significance between the comparison groups ($p < 0.05$) or those approaching significance ($p = 0.05$-0.10) were submitted to multivariate analysis utilizing a stepwise logistic regression technique. For all tests, the threshold for significance was a p value of 0.05.

The study was approved by the Goshen Health institutional review board.

Our Results

There were 240 sequential patients under the management of three medical oncologists during the time interval of the study. The cohort characteristics, including patient, payer, cancer type, and treatment variables are summarized in Table 2, page 46. The majority were married women with either commercial insurance or Medicare as their primary health coverage. Approximately one-half had documentation of at least one of the five pre-specified comorbidities of interest with a median performance status of 1. Of the cohort, 211 (88 percent) had pre-treatment education documented via either a chemotherapy orientation series routinely offered to patients starting systemic therapy or one-on-one education with a nurse practitioner or physician assistant in the medical oncology division. The cancer center's integrative care team, which consists of dedicated naturopathic physicians, dietitians, and counselors, provided support to 89 percent of patients at the time of their treatment. Tumor site groupings, chemotherapy administration prior to the study period (yes or no), infused agent type, number of agents, and median infusions per patient are provided in Table 2. The treatment was non-curative in intent for 142 patients (59 percent) in the cohort.

One hundred and twenty-one patients (50.4 percent) had 249 documented contacts with the cancer center concerning treatment-related side effects (range of contacts, 0-11). Of these patients, 51 (21 percent) ultimately made 58 ER visits during the specified study time (median days between infusion and ER usage was 6 days, range 0-70 days); 31 (53 percent) of these incidents had documented prior cancer center contact related to the complaint and 24 resulted in patients being directed to proceed to the ER. The remaining 27 ER visits were either patients who self-referred to the ER, patients who were referred by parties outside of the cancer center, or patients who ignored advice given by cancer center staff and went to the ER. Thirty-two of the 58 visits (55 percent) occurred outside of normal working hours. Independent physician review concluded that, in total, 44 of the 58 visits (76 percent) were avoidable. With the understanding that patients often have multiple complaints when presenting at the ER, the most common presenting complaints in avoidable ER visits included gastrointestinal (GI) complaints (21 instances), pulmonary complaints (8 instances), musculoskeletal complaints (8 instances), and those related to fever and chills (6 instances). The most common presenting complaints among those whose ER visit was assessed as unavoidable included concerns for sepsis (5 instances), severe pulmonary complaints (3 instances), severe GI symptoms (3 instances), paclitaxel reactions (2 instances), and suicidality (2 instances). Overall, 29 of the 58 ER visits (50 percent) resulted in hospital admissions—18 of the 44 (41 percent) were avoidable ER visits and 11 of the 14 (79 percent) were unavoidable.

As of April 30, 2020, 55 of the 240 patients in the study have died. This includes 21 of the 51 patients (41.2 percent) with ER visits during the specified study interval and 34 of the 189 (17.9 percent) patients who did not have an ER visit during the study interval ($p < 0.005$).

Table 1. Independent Variables Assessed for Impact on ER Utilization

Demographic	Health Literacy and Education	Health and Functional Status	Financial, Access, and Convenience	Provider and Cancer Variables	Treatment Variables
Age	Highest education	DM	Payer	Medical oncologist	Treatment intent
Gender	Chemotherapy orientation class	CHF	Distance from cancer center	Cancer type	Integrated care support
Marital status	One-on-one chemotherapy education	COPD CKD	Toxicity complaint	Complaint contact person	Treatment prior to second quarter 2019
		HTN	Day of contact	Number of complaints	Number of infusions
		Number of comorbidities	Interval infusion to ER visit		Number of agents
		ECOG PS	Interval clinic visit to ER visit		Type of agent(s)

ER = emergency room; DM = diabetes mellitus; CHF = history of congestive heart failure; COPD = chronic obstructive pulmonary disease; CKD = chronic kidney disease; HTN = hypertension; PS = performance status.

In comparing patients with ER utilization versus those without (Table 3, page 47), significant factors associated with ER utilization, included:

- Increasing Eastern Cooperative Oncology Group (ECOG) performance status
- Cancer type (with patients with upper GI cancer, more than one type of cancer, and hematologic malignancies all having greater than 30 percent prevalence of ER utilization)
- Increasing number of systemic therapy agents utilized
- The application of cytotoxic agents (as compared to targeted or immunotherapy agents)
- Payer status (Medicaid status had the highest rate of ER utilization, and commercial payer status had the lowest).

In the multivariate logistical regression model, ECOG performance status, the number of agents utilized, and payer status (Medicare) remained significant (Table 3, page 47 and Figure 1, page 48).

In comparing groups with avoidable ER visits versus the remainder of the patient cohort (Table 4, page 49), univariate analysis revealed that, again, increasing ECOG performance status was associated with increased risk of avoidable ER utilization. In addition, the increasing number of systemic agents utilized and the addition of at least one cytotoxic agent were associated with increased avoidable ER utilization. Of patients receiving cytotoxic therapy, 20 percent were assessed to have an avoidable ER visit versus only 7 percent of those receiving only targeted therapy or immunotherapy. Avoidable ER utilization was also associated with fewer triage calls to the cancer center. After a multivariate analysis, only ECOG status and number of agents used remained significantly associated with avoidable ER utilization. However, additional covariate factors in the model (which were not significant on univariate analysis) became significant in the multivariate model. These included histories of congestive heart failure, which had the highest odds of avoidable ER utilization at 9.12, and payer status, particularly Medicare as compared to commercial or Medicaid, which was associated with increased odds of avoidable ER utilization. Two factors were found to mitigate avoidable ER utilization. These included the number of triage contacts to the cancer center and attendance in a chemotherapy orientation class. Triage contact showed a 38 percent reduction in odds of avoidable ER utilization. Attendance of a chemotherapy orientation class was associated with an approximately 50 percent reduction in the odds of avoidable ER utilization, but this apparent trend did not reach statistical significance.

An exploratory univariate analysis (Table 4, page 49 and Figure 2, page 48) of patients assessed as having avoidable versus unavoidable ER utilization demonstrated that the absence of contact with cancer center staff regarding patient symptom complaints and higher educational status increased the probabilities of avoidable ER visits. Of the 51 patients with ER visits during the study time interval, 24 contacted the cancer center

(continued on page 47)

Table 2. Background Cohort Description

	Median (Range)	Variable	N (%)	Variable	N (%)
Demographic Data					
Age	64 (28-92)	Gender Male Female	 96 (40%) 144 (60%)	Highest educational level Did not graduate HS HS graduate College graduate Advanced degree Unknown	 31 (13%) 91 (38%) 32 (13%) 9 (4%) 77 (32%)
Distance to cancer center	12.1 (0-102.4)	Marital status Married Divorced Widowed Single	 153 (63.8%) 30 (12.5%) 27 (11.3%) 28 (11.7%)	Payer Commercial Medicare Medicaid Uninsured	 99 (42%) 102 (43%) 30 (12.5%) 9 (3.8%)
Comorbidity and Functional Assessment					
Comorbid condition/patient	1 (0-4)	Comorbid conditions DM CKD COPD CHF HTN	 45 (18.8%) 13 (5.4%) 30 (12.5%) 6 (2.5%) 86 (35.8%)	Comorbid conditions/patient 0 1 2 3 4	 119 (49.6%) 80 (33.3%) 31 (12.9%) 9 (3.8%) 1 (0.4%)
ECOG performance status	1 (0-3)				
Tumor Site Grouping				**Patient Education and Support**	
		Breast Hematologic Lung Lower GI Gynecologic Hepatopancreatobiliary	51 (21%) 47 (20%) 41 (17%) 30 (13%) 23 (10%) 10 (4%)	Chemotherapy orientation class Yes No	 112 (46.7%) 128 (53.3 %)
		Genitourinary Upper GI Head and neck Sarcoma Skin More than one cancer	8 (3%) 9 (4%) 5 (2%) 3 (1%) 7 (3%) 6 (3%)	NP or PA education Yes No Integrated care team support Yes No	 180 (75%) 60 (25%) 214 (89.2%) 26 (10.8%)
Systemic Therapy					
Infusions per patient	4.5 (1-27)	Chemotherapy prior to study period Yes No	 162 (67.5%) 78 (32.5%)	Treatment intent Curative Non-curative	 98 (41%) 142 (59%)
Number of agents	2 (1-4)	Drug type Cytotoxic Targeted agent Immunotherapy Study drug	 167 (69.6%) 92 (38.3%) 46 (19.2%) 4 (1.7%)		

HS = high school; DM = diabetes mellitus; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; CHF = congestive heart failure; HTN = hypertension; NP = medical oncologist nurse practitioner; PA = physician assistant.

Table 3. Univariate and Multivariate Analysis of Significant Factors Associated with ER Utilization Compared with No ER Utilization

Univariate Analysis ER Visit Yes Versus No (Non-significant Variables Not Shown)		ER No	ER Yes	*p* Value	Multivariate Analysis Odds Ratio (95% Confidence Interval)	*p* Value
ECOG PS	0 1 2 3	99 (91%) 69 (76%) 13 (57%) 5 (50%)	10 (9%) 22 (24%) 10 (43%) 5 (50%)	0.005	2.56 (1.65-4.13)	0.005
Cancer group	Breast Genitourinary Gynecologic Head and neck Hematologic Hepatopancreatobiliary Lower gastrointestinal Lung More than one cancer Sarcoma Skin Upper gastrointestinal	42 (82%) 8 (100%) 19 (83%) 5 (100%) 32 (68%) 9 (90%) 24 (80%) 34 (83%) 3 (50%) 3 (100%) 7 (100%) 3 (33%)	9 (18%) 0 (0%) 4 (17%) 0 (0%) 15 (32%) 1 (10%) 6 (20%) 7 (17%) 3 (50%) 0 (0%) 0 (0%) 6 (67%)	0.008		NS
Number of agents	1 2 3 4	82 (90%) 63 (76%) 32 (76%) 12 (50%)	9 (10%) 20 (24%) 10 (24%) 12 (50%)	0.005	2.30 (1.62-3.34)	0.005
Cytotoxic agent	No Yes	64 (89%) 125 (74%)	8 (11%) 43 (26%)	0.015		NS
Payer	Commercial Medicare Medicaid Uninsured	87 (88%) 23 (77%) 72 (71%) 7 (78%)	12 (12%) 7 (23%) 30 (29%) 2 (22%)	0.028	2.89 (1.3-6.85) 2.67 (0.72-10.65)	0.01 0.09

NS = not significant.

(continued from page 45)

prior to the ER utilization: 14 (58 percent) of these visits were assessed by the independent review as avoidable. On the contrary, of the 27 patients with ER utilization who did not contact the cancer program with symptom complaint prior to ER utilization, 24 (89 percent) were assessed as avoidable ($p = 0.023$). Data showing patients' highest educational status were available for 31 of the 51 patients who used the ER. Avoidable ER utilization correlated with increased levels of patient education status. Of the 31 patients with available educational status data, 4 of 7 (57 percent) who did not graduate high school and 11 of 15 (73 percent) high school graduates had ER utilization assessed as avoidable, whereas 9 of 9 (100 percent) patients with a college degree or higher had ER utilization assessed as avoidable ($p < 0.005$).

What Does This Mean?

For most healthcare industry stakeholders (patients, payers, and providers), the reduction of unnecessary ER utilization for patients on systemic therapy is advantageous. ER utilization is associated with increased costs and patient inconvenience, and it presents a threat to value-based reimbursement, which would include measures of ER utilization and costs of care associated with systemic therapy.[14] In this study, we have rigorously evaluated a sequential cohort of patients on systemic therapy in a comprehensive community-based cancer center. Despite significant programmatic efforts, 21 percent of our patients presented to the ER with complaints within the study time frame (4 months), with 55 of the 58 visits occurring less than 30 days after initiation of systemic therapy administration. Of these visits, 75 percent were

(continued on page 49)

Figure 1. Forest Plot of Significant Factors Associated with ER Utilization

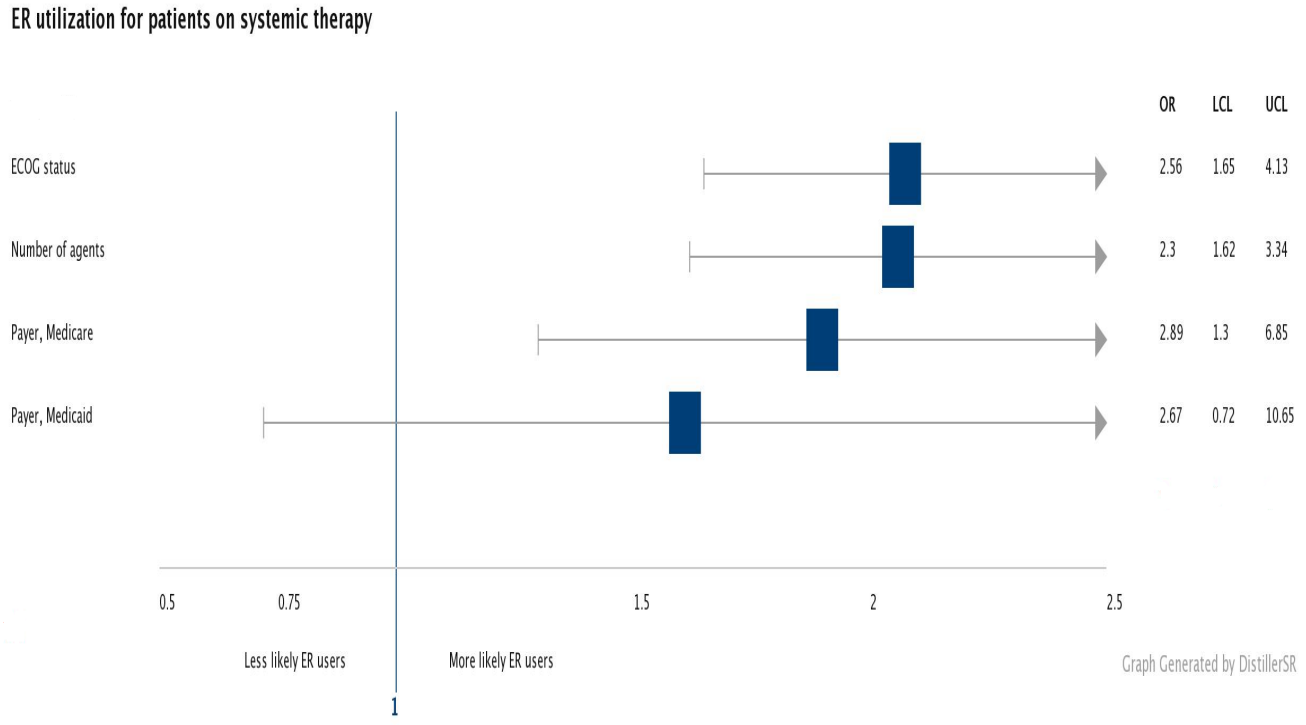

Figure 2. Forest Plot of Factors Associated with Avoidable ER Utilization and Factors Associated with Reduced Avoidable ER Utilization

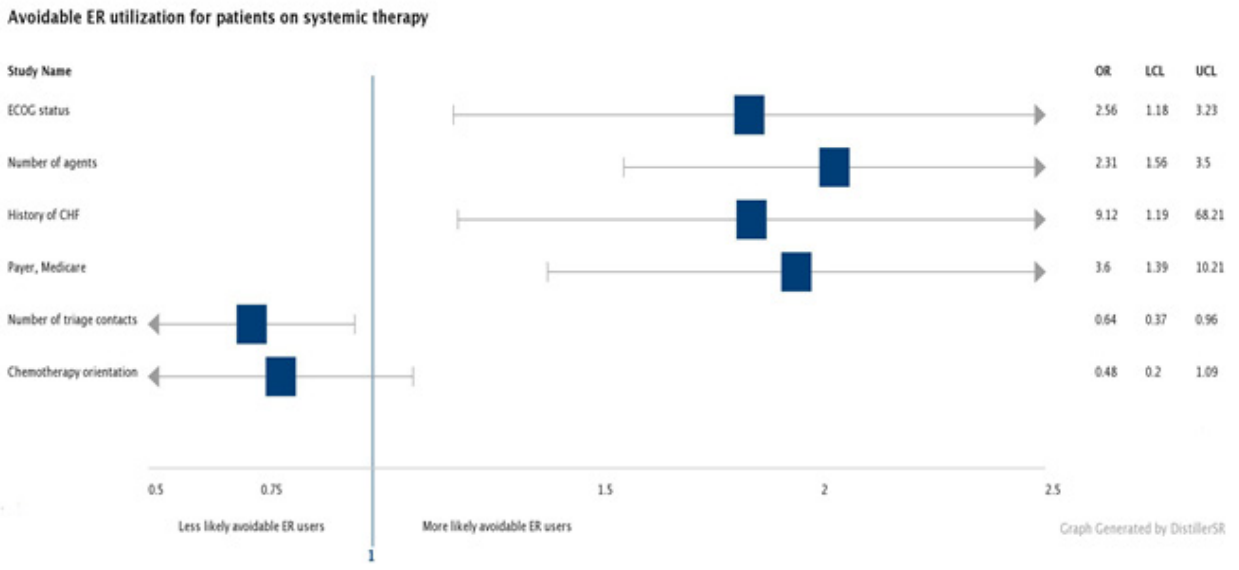

Table 4. Univariate and Multivariate Analysis of Significant Factors Associated with Avoidable ER Utilization Versus All Others

Univariate Analysis: Avoidable ER Visit Versus All Others (Non-significant Variables Not Shown)		No ER Visit or Not Avoidable ER visit	Avoidable ER Visit	*p* Value	Multivariate Analysis Odds Ratio (95% Confidence Interval)	*p* Value
ECOG PS	0 1 2 3	103 (95%) 72 (81%) 17 (74%) 7 (70%)	6 (5%) 19 (19%) 6 (26%) 3 (30%)	0.005	1.93 (1.18-3.23)	0.01
Number of agents	1 2 3 4	85 (93%) 67 (81%) 35 (83%) 15 (63%)	6 (7%) 16 (19%) 7 (17%) 9 (37%)	0.005	2.31(1.56-3.50)	0.005
History of CHF	No Yes	199 (85%) 3 (50%)	35 (15%) 3 (50%)	0.05	9.12 (1.19-68.21)	0.03
Cytotoxic agent	No Yes	67 (93%) 135 (80%)	5 (7%) 33 (20%)	0.01		NS
Payer	Commercial Medicaid Medicare Uninsured	90 (91%) 25 (83%) 79 (77%) 8 (89%)	9 (9%) 5 (17%) 23 (23%) 1 (11%)	0.07	3.60 (1.39-10.21)	0.01
Number of triage contacts	Mean triage calls	2.25	1.41	0.02	0.62 (0.37-0.96)	0.05
Chemotherapy orientation class	No Yes	102 (80%) 100 (89%)	26 (20%) 12 (11%)	0.05	0.48 (0.20-1.09)	0.09

PS = performance status; CHF = congestive heart failure.

(continued from page 47)

felt to be avoidable based on independent physician review. Half of the ER visits resulted in hospital admission, and ER utilization was associated with earlier death compared to non-users.

Despite full-time availability of skilled nursing symptom assessment and triage, many patients presented for ER evaluation without contacting the cancer center or their treating physician. These patients present real challenges for cancer centers that will be held accountable on payer-based quality assessment.[22] Clearly, payers expect more proactive than reactive patient management strategies from physicians. Therefore, identification of high-risk patients is essential.

We found that both ER utilization and avoidable ER utilization are strongly related to patient performance status and the number of different agents to which the patient was exposed during the study time frame. These study findings are unique but validate clinical common sense. It is also important to understand that the odds ratios reported in the results represent incremental risk between consecutive values. For example, the odds ratio between a performance status of zero and one is 2.56, but the odds ratio between a performance status of zero and two would be the square of that value. Therefore, the impact of these factors on the risk of ER utilization is substantial. It would be advisable for cancer centers wishing to limit ER utilization to closely monitor patients' performance status on an ongoing basis, as well as during periods of agent addition to a regimen or transitions of regimens, because these are periods of heightened risk of ER utilization, which includes avoidable visits.

A history of congestive heart failure was the only pre-defined comorbid condition that predicted avoidable ER utilization. Surprisingly, other comorbid conditions were not individually identified as predictive, nor was the total of comorbidities present in each patient predictive of ER utilization. Congestive heart failure is a known comorbid condition associated with frequent hospital admission and readmission.[23] Our study corroborates

these findings. Although the number of patients with this diagnosis who also received cancer treatment was very small, half of these patients had avoidable ER visits during the study period. This is a difficult patient population in general and likely even more so when on systemic therapy. For this specific patient population, aggressive monitoring and short cycled visits may help avoid unwanted medical events.

In our study, payer status is related to ER utilization, which has also been previously demonstrated by others.[5] However, in this study, Medicare status holds significance in a multivariate model. Patient age was factored in the multivariate model, and the remaining significance of Medicare did not reflect the age of the population. Interestingly, patients with commercial insurance had the lowest rate of ER utilization. It is plausible that out-of-pocket expenses (which may not be present with Medicare or Medicaid) may influence patients with commercial insurance to avoid visiting the ER.

Programmatic and operational changes at the cancer center level can impact avoidable ER utilization among patients with cancer.[13,24,25] We identified that avoidable ER utilization can be alleviated with an effective phone triage program. In our cancer center, the phone triage system is staffed during working hours by former ER nurses, who may have proven effective in reducing unnecessary ER utilization, which is a rational construct for other cancer centers to consider. The chemotherapy orientation class (during which patients are given structured educational content, including information about the phone triage system) was associated with a reduction in avoidable ER visits but was not statistically significant. In our study, less than half of our patients had documented attendance at this orientation. (Typically, this education was delivered one-on-one with an advanced care practitioner.) Our data suggest that structured and standardized educational content for patients embarking on systemic therapy may reduce ER visits.

A comparison of the 51 patients with ER utilization was made between those who had avoidable and unavoidable ER visits. Small numbers precluded definitive conclusions, so this comparison was done in an exploratory fashion. Patients who contacted the cancer center with a complaint had an association with decreased avoidable visits. This is intuitive and reassuring that programmatic support can impact avoidable ER utilization. Interestingly, patients with higher educational status appeared to present to the ER for avoidable reasons. One might surmise that this has to do with access, because those with advanced degrees may be limited by work schedules. However, in this study, the mean age of patients with advanced degrees in this cohort was 71 years, compared to 64 for the entire cohort, and many patients were well past retirement age. There may be additional unidentified factors involved with this finding. Regardless, because most ER utilization in this study occurred outside regular working hours, cancer centers seeking avenues to reduce ER utilization should make efforts to expand non-ER access during those times.

This study rigorously documented potential factors associated with ER utilization, including demographic information, patient level of education, cancer program education delivered, and cancer- and treatment-related factors, as well as patient performance status and an assessment of comorbidity. Despite this, there are limitations that deserve consideration. Only documented data could be collected. Missing data or data entered in error could be translated into the study results. The study is retrospective and, as such, predisposed to multiple forms of bias. Although data collection was thorough, the number of patients in the study is relatively small. As such, differences may exist among the comparisons that were undetected due to statistical power. In addition, the multivariate models suggested explanations for only approximately 20 percent of the data variability in each model. This suggests that even though the data collection was thorough, there remain other unidentified significant factors that could explain variability in the comparisons.

ER utilization (both avoidable and unavoidable) is common for patients undergoing systemic therapy for cancer. The data from this study may prove useful for programs in identifying patients at highest risk and for implementing mitigation strategies against avoidable ER utilization in this patient population. OI

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Statement of Contributions

Study concept and design: Henry, Coil, and Kelty.

Data collection: Henry, Coil Griffin, Deardorff, and Davis.

Statistical analysis and interpretation: Li and Henry.

Manuscript creation and revisions: Henry, Deardorff, Li, Kelty, Kio, and von Holzen.

Final approval of manuscript: All authors.

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SURVEY

BY IZUMI OKADO, PHD, AND RANDALL F. HOLCOMBE, MD, MBA

Survey Instrument Says:

Patients Care About Cancer Care Delivery

Healthcare delivery systems are rapidly evolving, and research on cancer care delivery expanded with the National Cancer Institute's emerging field, cancer care delivery research (CCDR). CCDR focuses on improving clinical outcomes and patient well-being by developing new and generalizable knowledge on patient, clinician, and organizational factors that influence care delivery. Patient-centered research is an important attribute of CCDR, and patient-centered care is highlighted as a hallmark of high-quality cancer care delivery. In this article, we describe patients' perspectives on participation in CCDR studies based on feedback and comments received from patients during our research. Insights reveal the importance and enthusiasm for CCDR studies expressed by patients, and their perspectives on these studies will inform future research and clinical practice toward high-quality, patient-centered care delivery.

Research on how we deliver healthcare has rapidly expanded in recent years. With nearly 1.7 million individuals diagnosed with cancer each year in the United States and the rising costs of care, cancer programs face considerable challenges to providing high-quality care for patients with cancer.[1,2] Healthcare delivery for these patients is complex, because anticancer treatment often involves multimodal interventions, numerous providers, different care settings, and multiple transitions in care.[3-5] Projected oncology workforce shortages also hamper efforts to improve cancer healthcare delivery.[6] In response to evolving cancer health services research, the National Cancer Institute Community Oncology Research Program (NCORP) developed CCDR as "a multidisciplinary science that seeks to improve clinical outcomes and patient well-being by intervening on patient, clinician, and organizational factors that influence care delivery."[7] Importantly, CCDR focuses on developing new and generalizable knowledge about the effectiveness, acceptability, cost, optimal delivery mode, active ingredients, and causal mechanisms that influence outcomes and affect the value of cancer care across diverse settings and populations.[4] As described in a recent commentary by Geiger et al.,[8] under NCORP, CCDR has evolved to address a diverse range of research topics, study designs, patient populations, and outcomes.

> Given the complexity of care coordination involved with cancer treatment, it is not surprising that lack of care coordination is identified as one of the challenges patients and families experience during their cancer care journey.

Patient-Centered CCDR

As stated above, patient-centered research is recognized as an important attribute of CCDR. According to a review article by Kent et al.,[4] CCDR studies are most likely to have the greatest impact on practice change if they encompass patient-centered attributes, including saliency of problems to patients and clinicians, incorporation of diverse patient populations and settings, and implementation into real-world practice. Consistent with this perspective, at a 2019 National Cancer Policy Forum workshop, attendees identified augmentation of the patient voice in routine

cancer care delivery as a potential strategy to improve the efficiency and overall quality of care delivery.[9] Many CCDR studies include patient-reported outcomes; patient-reported outcomes address patient-reported symptoms, quality of care, and functional assessment, and they are increasingly integrated into routine clinical care and research.[10] Other examples of patient-centered CCDR include studies focused on financial hardship and financial toxicity, patient navigation, cancer screening and prevention, and survivorship.[11-13]

Another important area in CCDR is care coordination. Despite rapid advances in anticancer therapies and declining cancer mortality,[2] prior research indicates that many patients with cancer receive poorly coordinated care.[14] Given the complexity of care coordination involved with cancer treatment, it is not surprising that lack of care coordination is identified as one of the challenges patients and families experience during their cancer care journey.

Patients' Perspectives on CCDR Participation

Though patient input is recognized as important to derive meaningful practice changes through CCDR, few studies have examined patients' perspectives regarding participation in CCDR studies. A better understanding of patients' experiences with CCDR participation provides important insights to inform the development of future CCDR studies. To that end, this commentary provides a broad view of patients' motivations for participation, benefits gained from participation, and suggestions for future research derived from our studies on cancer care coordination.

Our Methods

Since 2018 we have conducted investigator-initiated CCDR studies at University of Hawaii Cancer Center, a National Cancer Institute-designated cancer center. This cancer center is also an NCORP Minority and Underserved Community Site. In the course of these studies, we have developed, validated, and refined a Care Coordination Instrument for patients with cancer (Figure 1, right)[15,16] and created and tested a parallel instrument for family caregivers (Figure 2, page 55).[17] Nearly 400 patients on active therapy have participated in our studies, which, in addition to survey administration, included both focus group discussions and interviews. Throughout, we have gained an understanding about patients' perspectives on care coordination, as well as their thoughts on participation in CCDR studies. Because this article is a commentary, we did not obtain institutional review board approval. The research studies referenced in this commentary are approved by our institution's institutional review board.

To summarize patients' perspectives of CCDR participation, we first reviewed all transcripts of focus group discussions from our prior research,[15] email communications, and responses to open-ended questions incorporated in the survey. Next, we identified patients' comments that specifically addressed CCDR participation and organized their comments into major themes.

Our Results

Four major themes emerged from our content analysis: (1) CCDR participation: motivation, (2) CCDR participation: benefits, (3) reflections, and (4) future directions. These themes are described below, with examples of patients' comments illustrating each.

Figure 1. Patient Care Coordination Instrument

For each of the questions, respondents are asked to check the box for the response that best applies to their experiences with care coordination. Response options range from *strongly agree* to *strongly disagree*. Two representative questions from each of the three domains are listed below:

Domain 1. Communication

- My oncologist explains different treatment options to me.
- I know which of my doctors to call if I have questions or any complications from my treatments.

Domain 2. Navigation

- I have a family member, a close relative, or a friend who helped coordinate my cancer care.
- I was provided information or received assistance for any emotional, financial, or social issues that might be of concern to me.

Domain 3. Operational

- It was easy to schedule visits with my primary oncologist.
- When I call my oncologist, I receive a return call in a timely fashion.

Editor's Note: The full patient care coordination instrument is available upon request from the authors: iokado@cc.hawaii.edu.

CCDR Participation: Motivation

Consistent with UK-based research findings regarding altruistic motivation among research participants with cancer,[18] many patients described their motivation to participate in CCDR studies as wishing to help other patients with cancer in the future. For some patients, CCDR participation also served as an indirect means to communicate their experiences to inform clinical practice.

> "*I am interested in joining your discussion group and participating in the cancer care improvement study. Anything to help us going forward and those in the future in need of care.*"

> "*I think it's really good you're doing this survey because I hope doctors learn from it. …If this information ever gets out to them of what patients really need. It's not just the medical, I'm taking care of your cancer. There's so much more. And that just having a good oncologist isn't enough.*"

Figure 2. Caregiver Care Coordination Instrument

For each of the questions, respondents are asked to check the box for the response that best applies to their experiences with care coordination. Response options range from *strongly agree* to *strongly disagree*. The 27 items in this instrument are parallel to those in the patient instrument. Two representative questions from each of the three domains are listed below:

Domain 1. Communication

- The role of doctors from different specialties is clearly explained to my family member and/or friend.
- The oncologist always reviews past and current medical history with my family member and/or friend.

Domain 2. Navigation

- My family member and/or friend was informed of financial aspects of cancer care.
- I feel like the oncologist thinks about my family member's/friend's living situation when planning treatments.

Domain 3. Operational

- I have trouble scheduling an appointment at the time and date that is good for my family member/friend.
- The oncologist had all of the information he or she needed, such as test results, to make decisions about my family member's/friend's treatment.

Editor's Note: The full caregiver care coordination instrument is available upon request from the authors: iokado@cc.hawaii.edu.

CCDR Participation: Benefits

In contrast to clinical intervention trials where patients may receive new therapy, participation in CCDR studies, particularly those that are observational, often provides minimal direct benefit to patients. That said, many patients in our CCDR studies provided extensive positive feedback, indicating that they enjoyed and perceived benefits from participation. Focus groups provided an opportunity for patients to not only participate in the research process (refining the Care Coordination Instrument) but also describe their care coordination experiences, as well as discuss and share their thoughts with other focus group participants:

"*I wanted to let you know how much I enjoyed the focus group last evening.*"

"*This is very good and informative.*"

"*Thank you for the opportunity to join this study.*"

Reflections

Participation in CCDR focus groups provided opportunities for some participants to reflect on their cancer care experiences. An advantage of focus groups is that they can serve as an opportunity for participants to learn about others' experiences and diverse opinions,[19] because these discussions served to bring new insights on their care experiences:

"*The questions and group discussion made me more aware and appreciate the good care I received while undergoing cancer treatment.*"

"*I think there's a lot to be desired in how they* [providers] *are doing things. There's a lot of good, but there's a lot to be desired.*"

Future Directions

In our CCDR studies, most patients expressed interest in participating in future studies. Of all of the participants, more than 95 percent requested future updates and communication from the research team, and many patients have periodically contacted the research team after conclusion of these CCDR studies to inquire about opportunities to participate in additional projects:

"*I consider this program extremely valuable, thus, important to write to you. If you still need volunteers to talk story, complete a survey, or whatever you might need, please let me know. I am available to you.*"

"*I am happy to support those whose mission is to improve cancer care. Please contact me in the future if you need anything more.*"

Additionally, a major theme on patient navigation emerged regarding suggestions for future research. In our CCDR studies, many patients indicated that they have not heard of a patient navigator or of patient navigation services. For those participants, upon learning about patient navigation services from other focus group participants, this was identified as a gap and need for future studies:

"[We need] *something that addresses this navigator that everybody says exists, but* [who] *hides in a closet.*"

Our Limitations

There are limitations with this commentary. Patients with cancer in our CCDR studies were derived from community-based oncology practices and hospital outpatient treatment clinics; thus, generalization could be limited to patients receiving inpatient services or those seen in academic settings. Participation in CCDR studies may not be feasible for some patients who require intensive therapy and/or hospitalization, and those who participate in interventional studies may have varied experiences with research participation. Further, our CCDR projects were primarily observational and included focus groups and survey administration. It may be that because the time and effort required from participants were minimal, patients with cancer in our prior CCDR studies were more willing to participate in future studies.

Discussion

This commentary summarizes major themes regarding how patients with cancer view participation in CCDR. Overall, patients perceived many positive aspects of CCDR participation and expressed enthusiasm about participating in these studies. Participation in CCDR studies provided benefits to participants, including opportunities to contribute to research for altruistic motivations; to reflect on their care experiences; to learn new information, such as patient navigation services; and to discuss and receive support regarding their concerns about care delivery among focus group participants. Importantly, patients recognize the value and need for CCDR studies, and they are willing to contribute to efforts to improve the quality of cancer care delivery.

As we focus on enhancing patient-centered care, future healthcare delivery studies focused on cancer care should incorporate patients' perspectives and explore strategies to improve patients' experiences with care delivery. Integrating patients' needs and preferences with respect to cancer care delivery will lead to improved quality and value of care—something our patients clearly desire.

Potential implications of this commentary include increased role and participation of cancer patients in healthcare delivery research, improved cancer care quality, greater focus on a patient-centered care model of delivery, and greater patient satisfaction. Future research incorporating patients' perspectives of cancer care coordination is warranted to improve the value and quality of healthcare delivery for oncology patients. OI

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6 STEPS
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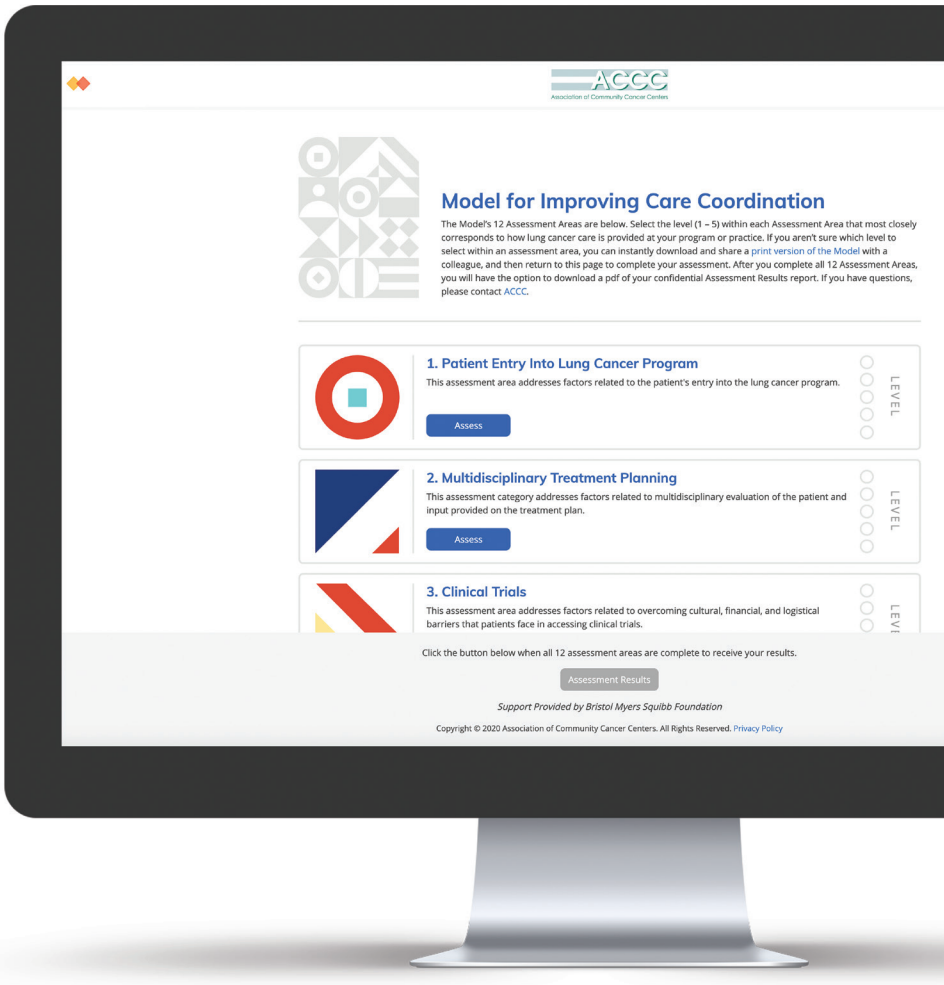
for Lung Cancer Patients on Medicaid



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Waste Not, Want Not

BY BARBARA A. GABRIEL, MA

The quest to reduce oncology drug waste

The issue of drug waste is nothing new in oncology. Over the years, many published reports have sought to put a dollar amount on this waste. In 2017, the Centers for Medicare & Medicaid Services (CMS) began requiring all physicians, hospitals, and other providers submitting Medicare Part B drug reimbursement claims to report any discarded amount of single-use vial or other single-use package drug. Based on that information, CMS now issues an annual Part B Discarded Drug Units Report that quantifies the annual amount the agency pays for discarded drugs and reports the names of the drugs wasted.

A report from CMS in January 2020 states that $725 million worth of drugs reimbursed by Medicare Part B were discarded in 2018.[1] The top 10 drugs by value of the wasted product accounted for nearly $456 million (Table 1, page 60).[2] Notably, 6 of these 10 drugs are anticancer medications. Collectively, the 6 drugs accounted for $330 million worth of discarded drugs. More than 26 percent of one medication—the hematologic malignancy drug Velcade® (bortezomib)—was discarded, accounting for nearly $123 million in waste.

Though the $725 million in wasted medicine reported by CMS in 2018 represents only 2 percent of the $33.3 billion the agency spent on drugs that year, that amount does not include spending by Medicaid and commercial insurers. Indeed, in 2016, researchers at Memorial Sloan Kettering Cancer Center published a study in *BMJ* in which they found that Medicare and private health insurers' combined waste near $3 billion in cancer drugs each year.[3]

The authors of the article wrote that these medications are discarded because many pharmaceutical companies package individual doses of infusion drugs in one-size-fits-all, single-use vials that hold too much medication for most patients: "This is particularly true for drugs for which dosage is based on a patient's weight or body size and that come in single-dose packages," the study's authors wrote. "These drugs must be either administered or discarded once opened, and because patients' body sizes are unlikely to match the amount of drug included in the vial, there is nearly always some left over."[3]

> With drug vial optimization, single-dose vials are used for multiple patients.[4] Drug vial optimization has been shown to be effective in using valuable medications that would otherwise have been wasted.

The Science of Dosing

Ali McBride, PharmD, MS, BCOP, former clinical coordinator of Hematology/Oncology at the University of Arizona Cancer Center and immediate past president of the Association of Community Cancer Centers, believes that discarding the drugs left over in one-sized vials can be avoided. "If we can change the sizes of vials, make them different sizes for different doses, we could significantly affect how much waste we produce," he says.

Dr. McBride says that the current dosing system could be modified by having pharmaceutical companies replace one-size-fits-all packaging with drug vial optimization or dose banding. With drug vial optimization, single-dose vials are used for multiple

Table 1. Part B Prescription Drugs with the Highest Dollar Waste[4]

Brand Name	Generic Name	Amount Spent on Discarded Units	Percentage of Total Spending Per Drug
Velcade®	Bortezomib	$122.6M	26.5%
Herceptin®	Trastuzumab	$77.7M	9.1%
Nplate®	Romiplostim	$48.8M	21.6%
Abraxane®	Paclitaxel protein-bound	$38.0M	13.7%
Kyprolis®	Carfilzomib	$32.9M	12.7%
Avastin®	Bevacizumab	$32.5M	3.1%
Botox®	OnabotulinumtoxinA	$27.7M	7.8%
Jevtana®	Cabazitaxel	$26.4M	26.2%
Xolair®	Omalizumab	$26.0M	6.3%
Simponi Aria®	Golimumab	$23.2M	7.6%
Yervoy®	Ipilimumab	$20.9M	7.6%
Remicade®	Infliximab	$17.2M	1.4%
Keytruda®	Pembrolizumab	$16.8M	0.9%
Vidaza®	Azacitidine	$15.2M	22.1%
Dacogen®	Decitabine	$14.9M	22.5%
Alimta®	Pemetrexed disodium	$13.7M	2.8%

Ali McBride, PharmD, MS, BCOP

patients.[5] Drug vial optimization has been shown to be effective in using valuable medications that would otherwise have been wasted. But, in practicality, drug vial optimization can be difficult to implement.

For one thing, the time to repurpose leftover drugs may be limited. According to pharmacy compounding guidelines in the *United States Pharmacopeia* Chapter <797>, partial amounts of leftover drugs can currently be used for another patient for only up to six hours after the vial has been opened.[6] Dr. McBride says it is important for oncology pharmacists to more accurately determine the extended stability dating of drugs so that providers can safely repurpose the medication remaining in a vial for subsequent patient(s). "We need data for determining the extended life of drugs," says Dr. McBride. "If a drug can be used up to 30 days, that is important to know and helpful to reducing waste."

However, Dr. McBride acknowledges that optimizing some older drug therapies is not feasible. In these cases, he says, dose rounding can help mitigate waste: "We expect dose rounding policies to reduce drug waste both with infusional chemo and oral oncolytics," says Dr. McBride. Dose banding, or the standardization of injectable chemotherapy doses into a defined set of dose ranges, or bands, is an alternative approach to precise dosing. Rather than basing dosages on body surface area, body weight, or other factors, dose banding determines a standard, pre-prepared dose of chemotherapy based on predefined ranges.[7] Dr. McBride says he believes that dose banding will gain traction as a method of stemming drug waste.

Melody Chang, RPh, MBA, BCOP, director of Pharmacy Operations at Florida Cancer Specialists and Research Institute, also believes more can be done to cut drug waste. She says getting manufacturers to address the waste inherent in packaging single-use vials is crucial. "When manufacturers package drugs in a limited quantity of strengths, they are most often only packaged as single dose vials (SDV), so you have no choice but to discard the leftover portion," explains Chang. "According to the CDC, vials labeled by the manufacturer as 'single dose' can only be used for a single patient and should not be shared with the next patient. Even though Medicare and almost all commercial payers


Melody Chang, RPh, MBA, BCOP

will pay for the leftover amount that is discarded, patients also share the costs based on all of the drug in the vial, not the amount they received. If manufacturers could be more thoughtful in the design of vials, starting when investigators develop dosing strategies in the early phases of clinical trials and creating more multi-dose vials, there would be less waste from the start."

Chang says that Florida Cancer Specialists is conducting research to determine how best to curb drug waste and what savings may be achieved by implementing dose rounding strategies. The practice is exploring the feasibility of this route and is currently examining the role of the EHR (electronic health record) in dose rounding. "The cost savings could be huge for payers and patients," says Chang.

Leveraging a Robotics Platform

Anthony Boyd, PharmD, BCPS, is the director of Pharmacy, Oncology Services, at Cleveland Clinic, where he is responsible for overseeing the clinical operations of the oncology infusion pharmacy on the main campus. There, Dr. Boyd's team uses advanced robotics to prepare chemotherapy infusions. Dr. Boyd has applied some of the capabilities of these robots to help stem drug waste.

In a recent *CANCER BUZZ* podcast, Dr. Boyd discussed Cleveland Clinic's initiative to reduce drug waste with the Association of Community Cancer Centers. He says that when CMS began requiring providers to put a specific price tag on their wasted drugs in 2016, the issue gained urgency.[8] "We took a look back to better understand the ins and outs of where our drugs went," says Dr. Boyd. "As we dug a little deeper, we identified a specific problem with oncology drugs. We got a multidisciplinary team together to take a look at it: myself, our specialty pharmacy officer, our director of informatics, our director of 340B, and our supply chain folks. We launched initiatives to be better able to identify where the remainder of our drugs go after we pay for and administer them. We wanted to shrink that amount."

Dr. Boyd said his team targeted the problem by addressing the potential waste of specific cancer drugs. "We went drug by drug," explains Dr. Boyd. "We took a top-down approach, targeting the agents we thought had the most potential for waste. And then we worked our way down. We implemented a process for our pharmacists and technicians to help them get closer to an optimal vial size."

Dr. Boyd says his team targeted a different drug each month. "At the end of the month, we would review our data to see if we were able to reduce waste. The exercise became a habit that enabled us to create step-by-step approaches to more accurately tailor specific drug dosages." Although it was labor-intensive, the initiative generated success. "For our targeted agents, we've been able to reduce the amount of the purchased drug that remains after it is given to a patient," says Dr. Boyd. "But all of this is a complex, manual process, spanning from billing on the front end to technicians creating a specific patient's vial size."

Turning to the advanced robotics that prepare chemotherapy infusions in his oncology infusion pharmacy, Dr. Boyd sought to leverage Cleveland Clinic's existing technology to curb drug waste. "During the past year, we've worked on developing a waste mitigation platform that enables our robots to make dosing alterations for specific drugs that we want to target to minimize waste," Dr. Boyd explains. "We've reprogrammed our automated system to select an appropriate vial size for a given patient. Automating such a complex process has really helped our team. Especially when you get to some of these vial sizes that aren't clean numbers, that don't line up equally, having an automated system to help select vials to minimize waste is really important."

Dr. Boyd says this initiative has been a coordinated effort among pharmacists, technicians, the finance team, and the supply chain team. "We work very closely with our electronic health record team to reconcile where we are and develop billing parameters for each different drug," he adds. "We've also worked closely with our physician teams and nursing teams to have them review dose rounding policies to ensure everything is clinically appropriate. It's a large, coordinated, multidisciplinary effort, and I think everyone understands the importance of it."

Repurposing Oral Oncolytics

Dr. McBride says that drug waste is not just relevant to infusion drugs; oral oncolytics are also often discarded when prescribers modify drug dosage, strength, or formulation during the course of a patient's therapy. "The fact that oral therapies are also a source of waste illustrates how much this market is growing," says Dr. McBride. "This is not just a problem with IVs—it is also a growing issue for the high-cost oral therapies that are starting to be used more."

Melody Chang agrees. "Oral oncolytics come in bulk packages, one-month supplies in bottles, but a lot of time, patients' dosages need to be adjusted," she explains. "You cannot just cut a pill in half like you can with other non-oncology drugs when the dose gets adjusted down 50 percent. Some manufacturers will provide dose exchange programs for patient to get another strength without paying the copays. But you still need to get another prescription and get a new bottle." Chang says that some cancer programs have launched initiatives that allow patients to donate their unused oral oncolytics to other patients rather than waste them.

In February 2020, the American Society of Clinical Oncology (ASCO) released a position statement on state drug repository programs, outlining ASCO's support for drug repository programs for oral medications, provided that they are maintained within a closed system. According to ASCO, there are currently 13 state drug repository programs for unused anticancer drugs, supplies, and devices. ASCO contends that "widespread use of such pro-

Florida Cancer Specialists and Research Institute has nearly 100 locations across the state.

grams could lower costs for patients and payers, improve access to treatment for people who can't afford high-cost cancer drugs, all while reducing the amount of unused medications in the outpatient setting."[9]

The Ohio State University Comprehensive Cancer Center Arthur G. James Cancer Hospital and Richard J. Solove Research Institute launched a program in January 2020 that enables patients with cancer to donate their unneeded prescribed oral oncolytics to other patients who cannot afford their medications. New rules adopted in October 2019 by the State of Ohio Board of Pharmacy permit donations of some anticancer drugs after pharmacists conduct an inspection of the donated drug to ensure that it is safe to re-dispense.

Dr. Boyd says his experiences with finding ways to reduce drug waste have taught him to stay flexible. "Find the data and identify where the areas of opportunity are," he says. "Talk to the folks doing the work every day. Ask the technicians, 'Hey, which vial sizes do you end up wasting a lot of at the end of the day?' Asking simple questions can help frame where your greatest areas of opportunity are."

Dr. McBride is confident that actions to combat drug waste have the potential to significantly decrease drug costs. "If we can minimize this waste, we can make a make a major dent in the price of these therapies," he says. "We need to have an open conversation with pharmacies and generic companies to optimize vial sizes. If we can get this information out there before a drug changes [goes generic], we can dispense drugs with less waste, and that will decrease the cost of care." OI

Barbara A. Gabriel, MA, is the senior writer/editor at the Association of Community Cancer Centers, Rockville, Md., and an associate editor of Oncology Issues.

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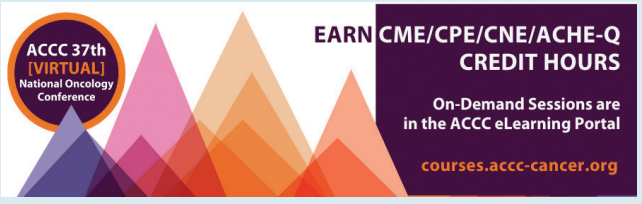

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Incoming ACCC President Shares Wellness Tools

Is one of your colleagues feeling particularly overwhelmed? Krista Nelson, MSW, LCSW, OSW-C, BCD, and her Compassion Team at Providence Cancer Team developed and shared with their leadership a tip sheet, "Recognizing or Having a Conversation with a Team Member Who Appears Stressed," on how to initiate these types of discussions, including sample scripting. Krista's team also developed a handout titled "Well-Being While Working Virtually—It's Possible!" These tools—and others—are available to you through the ACCC COVID-19 Discussion Forum. Join today and take part in important peer-to-peer conversations on strategies to maintain safety and quality cancer care and program operations during COVID-19; preparing for staffing shortages when COVID-19 cases increase; radiation therapist staffing when staff are quarantined; and much more. To access, go to accc-cancer.org/COVID-19 and click on "Member Discussions." Having trouble joining the group? Email llucas@accc-cancer.org.

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More Than Beauty: Meeting Patients' Aesthetic Needs

BY MARY VOROUS AND DEBBIE DENITTO

Survivorship support programs are a crucial element of comprehensive cancer care. Without them, patients currently in treatment or post-treatment may face unexpected physical and psychological challenges without professional support. As the manager of Wellspring, a cancer resource center located just two miles from Valley Health Cancer Center at Winchester Medical Center in Virginia, I understand the importance of providing holistic care that meets the body, mind, and spiritual needs of our patients. Wellspring is a support service of the cancer center, which is funded by the Valley Health Oncology Service Line and the Winchester Medical Center Foundation. We offer our patients with cancer and other chronic illnesses services such as:

- A hair salon
- Wig fitting
- Natural manicure and pedicure services
- Lymphedema sleeves
- Compression stockings
- Herbal foot baths
- Post-surgical camisoles
- Meeting space for support groups.

For services not covered by insurance, we are able to offer some free of charge and others at reduced cost.

In addition to working as Wellspring's business manager, I am a licensed cosmetologist and hairdresser. I have been a hairdresser for almost 40 years, and through this experience I wanted to bring to Wellspring a personal, customized service to help patients address the aesthetic side effects of their cancer therapies. Of course, aesthetic processes are just one part of the complex puzzle of healing from cancer treatments; there are psychosocial, nutritional, and physical needs as well. Yet, the aesthetic ramifications of cancer treatment are often overlooked.

Nurturing self-esteem is empowering to a patient, and this was our mission when developing the More Than Beauty program in 2018 as part of Valley Health Cancer Center's support services. Before this program, patients with cancer receiving care at Valley Health did not have a secure or comfortable place to go to when it came to their personal care. More Than Beauty fills this gap in care by offering patients with cancer a monthly two-hour class focusing on hair, skin, and nail care while in treatment or post-treatment, as well as mindfulness, exercise tips, and education about the benefits of good nutrition. These services allow us to nurture patients' self-esteem and help them to regain a sense of control.

The More Than Beauty class is held in a safe and private space for patients. Here they experience salon or spa services without feeling isolated from other patrons who may not share the same concerns as patients with cancer or other chronic disease. We transformed the classroom space to model a salon, with 12 beauty stations made up of removable tables and mirrors, fully equipped with water and natural products. Because of COVID-19, our class took a six-month hiatus. We plan to start up More Than Beauty again in 2021 with a reduced number of salon stations, practicing the same safety protocols as our hospital system.

Three staff cosmetologists lead the monthly More Than Beauty class, now in its third year. Their services are paid through support from the Valley Health Oncology Service Line and Winchester Medical Center Foundation. These licensed professionals provide personal consultations and share basic information about how to treat damage to the skin, nails, and hair that can result from cancer treatment.

The cosmetologists begin each class with guided meditation, pressure point therapy for the face and neck, and breathing techniques to relieve tension and stress. Once patients are relaxed, cosmetologists meet with them individually for a personal consultation. Patients share what medications they take and any side effects they are experiencing. The cosmetologists then speak with patients about what types of medication can cause aesthetic side effects to the hair, skin, and nails and how to best treat them. Wellspring staff communicates

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regularly with Valley Health Cancer Center's clinical staff, so cosmetologists stay apprised and up to date on cancer therapy-related side effects.

Common hair-related patient concerns include scalp irritation and the death of hair follicles during chemotherapy. In response, Wellspring's licensed cosmetologists teach patients anti-inflammatory and anti-bacterial best practices for scalp treatment. This education treats the whole patient—inside and out. Cosmetologists also walk patients through a sample skin care regimen, share light makeup and skin care tips, and discuss how natural products can help reduce the risk of infection and inflammation.

It is important for patients with cancer to understand that they should use natural products because of an increased risk of infection and inflammation in the body. Chemical products with acetone should be avoided, as well as acrylic nails. The cosmetologists provide education on eyebrow waxing and treatment, how to care for eyelashes and lips, and how to avoid possible irritants, endocrine disrupters, and toxins.

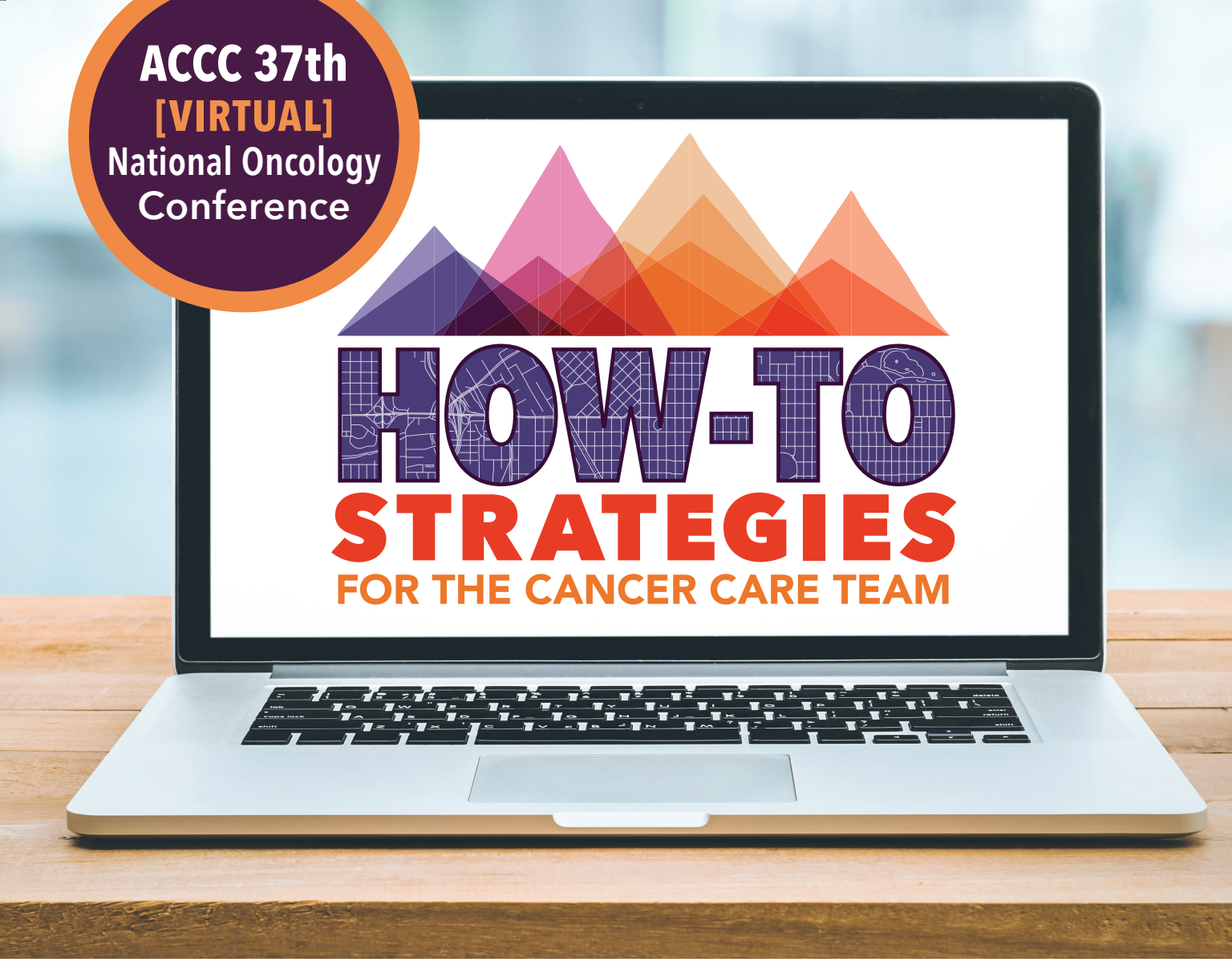
After the aesthetic portion of the class is over, Valley Health Cancer Center serves patients a light lunch, during which a nutritionist speaks about the importance of nutritional health. During the class, an oncology nurse navigator or wellness trainer—both Valley Health employees—speaks with patients about the cancer center's other available resources. "The goal of this program is for people to feel whole again and feel better about themselves," explains Debra DeNitto, community outreach coordinator at Valley Health Cancer Center.

Each More Than Beauty class closes with a poetic reading and an evaluation of services. Since program inception, we have only received positive feedback. Patients say they have found the class to be incredibly informative and that it helps them feel less stressed and more educated about how to care for their bodies.

To further help aesthetic professionals like cosmetologists and hairdressers support patients, in 2019 Wellspring staff received certification from SkyMD's *Eyes on Cancer* program (eyesoncancer.org). This program teaches aesthetic workers to spot early signs of skin cancer. After this training, aesthetic workers alert their clients to any unusual skin features and suggest that the clients follow up with their physician or dermatologist.

Wellspring continues to evolve and meet the needs of its patients through a new certification from Oncology Spa Solutions®, an approved provider of the National Coalition of Estheticians Association's commission on accreditation in oncology esthetics. Wellspring has also recently hired a coordinator of integrative care. This professional is readily available to support all patients with cancer when they walk through the door. OI

Mary Vorous is supervisor at Wellspring, the cancer resource center of Valley Health Cancer Center at Winchester Medical Center in Winchester, Va. Now retired, Debbie DeNitto was the oncology community outreach coordinator at Valley Health Cancer Center in Winchester, Va.



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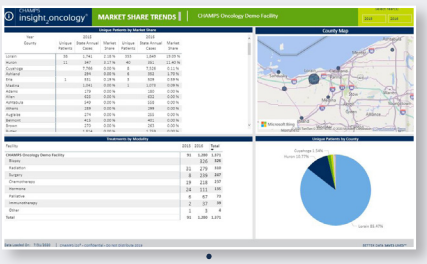

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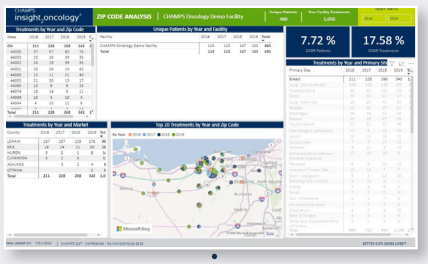

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