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JL701

Adapting to an Evolving Environment: The Role of the Inpatient Oncology Advanced Practitioner Team

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Background: The number of patients with cancer has increased due to an aging population and improved cancer survival. This increased prevalence has contributed to the growth of inpatient oncology services. At our institution, the non-transplant inpatient services average census has increased by 68% since 2011. Rising census numbers and resident physician work hour restrictions have required academic institutions to examine alternative inpatient care models. Initially, we established a one physician and one advanced practice provider (APP) inpatient oncology service for routine chemotherapy admissions. This service quickly expanded to accept any oncologic admission. Daily staffing now includes five APPs, two MDs, and two pharmacists. The APPs identified opportunities for improvement and implemented four key processes essential to this service, which we share here. **Processes:** Given increasing patient acuity, transfers to the intensive care unit (ICU) are far more frequent. Leapfrog initiatives require ICU level care be intensivist-directed. A formalized multi-disciplinary patient hand-off from the APP to the ICU oncology

service (also utilizing APPs) was jointly initiated to improve patient safety. This process shares essential information, especially about oncologic and infectious matters which are vital to a smooth and efficient handoff during a critical illness. The second process is a multidisciplinary huddle daily at 9am including: MDs, APPs, Social Work, Pharmacy, and the nurse patient care coordinator. The huddle provides a platform to review team census and individual APP workloads, plan anticipated admissions, discharge planning, length of stay concerns, visibility of the days planned procedures, quality improvement concerns, and timely recognition of outstanding team contributions. Thirdly, late day admissions were frequently causing a delay in necessary medical documentation. After completing late day admissions, APPs were regularly working after evening sign-out. APPs approached hospital administration, ultimately resulting in a new swing position, which serves as a bridge between afternoon admissions and evening sign out. This drastically improved APP job satisfaction as well as increased efficiency for these admissions. The fourth APP-driven improvement involves triaging patients among multiple oncology services. Given resident hour restrictions and monthly rotating resident staff, there was a need for consistent triaging of patients from a variety of locations (e.g. clinic, external facilities, emergency department (ED), and direct admissions). Apart from outside hospital transfers which require physician acceptance, the APP facilitates the admission. The involvement of experienced APPs further aids in the early recognition of common oncological critical illness (e.g., sepsis, tumor lysis, etc), thereby facilitating rapid

assessment and intervention by ICU teams. **Summary:** As the field of health care constantly evolves, so do the care needs of the ever-growing oncology population. APPs having a voice to modify infrastructures of the inpatient oncology services has led to improvements in the transition of critically ill patients to the ICU, communication among all staff, and increased training opportunities. In the future, we are interested in understanding more about how these processes have impacted length of hospital stay, APP and MD satisfaction, and patient safety.

JL702

Advanced Practice Provider-Led Early Detection Program for Pancreatic, Breast/Ovarian and Colorectal Cancers

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Background: Early detection of cancer in both average and high-risk populations offers the opportunity for earlier interception of a cancer diagnosis and treatment with curative intent. Our Early Detection Program (EDP) for pancreas, breast/ovarian, and colorectal cancers provides a personalized approach that includes risk assessment, screening, genetic testing, and development of a monitoring and management plan. In the case of pancreatic cancer with no standardized early detection modalities, it is imperative we develop comprehensive and effective screening guidelines. We are part of the Pancreatic Cancer Detection Consortium whose mission is to conduct research to improve the early detection of pancreatic cancer and its precursor lesions. In addition, since there is no cure for metastatic colorectal, breast or ovarian cancers, we have created a program for earlier detection to improve survival of these diseases. **Methods:** Our EDP protocols are prospective studies that are Institutional Review Board approved. Participants can be referred from providers or self-referred. Participants are required to complete an assessment and lifestyle questionnaire. We use national guidelines to identify their risk level. Study participants also complete a cancer anxiety index, defining their anxiety associated with the potential risk of developing cancer. Germline genetic testing plays a key role in early detection/interception and prevention programs. The testing identifies and determines each par-

ticipant's risk level. Most of our genetic risk assessment, education, and testing are provided by our genetic certified nurse practitioner. These on site services increase the rate of testing. The funding for the programs comes from grants and our hospital's foundation. Advanced Practice Providers (APPs) are the core of our EDP. Services include increased surveillance, chemoprevention, lifestyle education, discussion of risk reduction surgeries, multi-disciplinary tumor board for case review, and sub-studies looking at new technology for screening. We aim to establish a database to delineate patterns of characteristics, build a bio-specimen repository, and utilize molecular-based technology to develop novel biomarkers for early detection. **Results:** Pancreatic EDP was our first program that began in 2015. With our high enrollment of this program, our breast/ovarian EDP was developed in 2017, and our colorectal EDP in 2018. In total, our programs have 284 pancreatic participants, 64 breast/ovarian participants, and 30 colorectal participants. To date, we have diagnosed one cancer and in addition precursor lesions including 14 intraductal papillary mucinous neoplasms and 10 sessile polyps. Of our participants, 89% have germline genetic testing done. Our find rate for pathogenic variants is 25%, notably 15% higher than the national findings. Initial results of our cancer anxiety index reveals an increase in participants' anxiety due to their increased risk for developing cancer. This illustrates the need for multi-disciplinary management of participants. **Conclusions:** The EDP programs are ongoing. The effectiveness of our screening reveals some encouraging outcomes. Participants have expressed gratitude for our program. It allows them to be proactive in defining and reducing their cancer risk, while participating in research. Our EDP programs provide consistent care that is not otherwise easily available.

JL703

Advanced Practice Provider-Led Urgent Care and Acute Symptom Management for Oncology Patients

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Background: The Centers for Medicare & Medicaid Services (CMS)-instituted guidelines for 2020 intended to reduce potentially avoidable inpatient

admissions and ED visits for cancer patients receiving chemotherapy in a hospital outpatient setting ("Hospital OQR," 2019). Timely and appropriate management of treatment-related side effects reduces admissions and ED utilization, decreases healthcare costs, and improves quality of life. Thus, it is essential that patients have access to urgent care services, ideally provided by health care providers familiar with management of complications from cancer and cancer treatment (Battaglia, 2018). One successful strategy to improve access is to utilize Advanced Practice Providers (APP) in clinics and infusion centers. **Methods:** The University of Arizona at Dignity Health St. Joseph's Hospital and Medical Center in Phoenix, Arizona, hired a dedicated APP for their Infusion Center to provide symptom management and urgent care services for oncology patients. The goal of this position was to improve the quality of care, provide same-day access to care for acute symptoms, decrease the utilization of the emergency department, and prevent avoidable hospitalizations. The responsibilities of APP include management of acute complications of cancer therapy, such as adverse drug reactions, supportive care, and follow-up for at-risk patients with a high symptom burden. The APP also has same-day appointments available for the evaluation and treatment patients with urgent symptoms. Data was collected to assess the difference between the number of oncology patients who received a higher level of care before and after the APP position was implemented. **Results:** In 2016 and 2017, prior to the APP role, 5252 patients were treated in infusion for chemotherapy, immunotherapy and various supportive care encounters. Of these 5252 patients, 42 (0.79%) were sent to the emergency room from the infusion center. In 2018, 3061 patients were treated in infusion, and of those, 4 patients were sent to the emergency department (0.26%). **Conclusions:** Prior to an infusion center APP, individual oncologists managed their patients' acute symptoms. Clinic schedules were full and same-day appointments were rarely available. As a result, patients were routinely advised to go to the ED. Incorporating the role of an APP to provide services in the Infusion Center allowed prompt and proactive care for acute complications due to the patient's cancer or cancer therapy, success-

fully reducing the number of patients requiring emergency department visit. Both patients and providers expressed increased satisfaction with the availability of an APP to provide these services. In addition, this quality improvement is anticipated to be recognized favorably on the 2020 CMS Admissions and ED Visits for Patients Receiving Outpatient Chemotherapy measure. **Innovation:** Implementation of an APP in the infusion center, whose sole purpose is to manage symptoms and provide urgent care services, was an effective strategy to improve quality of care and decrease utilization of emergency department services and unnecessary admissions. Based on the success of this role, there are plans to increase the availability of APP services by extending the hours in infusion and including weekend coverage.

JL704

Advanced Practice Provider Promoting Advance Care Planning to Enhance Patient-Centered End-of-Life Care

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Background/Problem: Patients with cancer experience the high cost of cancer care and may receive unwanted treatment towards the end of life (EOL), with additional suffering which may not reflect their values and goals. Advance Care Planning (ACP) is the process by which patients with their healthcare provider and family establish values, goals, and preferences for future care, along with discussions on EOL care options. Advance Directives (AD) promotes patient autonomy and provides written documentation of patients wishes for future care. Patients with advanced cancer who have exhausted standard of treatment options are referred to the Department of Investigational Therapeutics (ICT). Unfortunately, less than 20% of the patients referred to ICT had ACP discussion and/or had completed the AD documents. Advanced Practice Providers (APPs) play a critical role in patient care and are in a unique position to educate patients and their family on ACP. **Purpose:** To determine if ACP discussions initiated by an APP would enhance patient-centered end-of-life (EOL) care of advanced cancer patients as reflected by an increase in the completion of advance directives (AD) and /or change in the code status to do not resus-

cite (DNR) of admitted patients and completion of AD and /or an out of hospital do not resuscitate DNR (OOHDNR) completion in the out-patient clinic. **Methods:** A quality improvement project was initiated by the APP (December 2018-January 2019) that included two phases. First, a retrospective data collection of patients without a scanned AD in the electronic medical record at the time of admission/clinic visit. Secondly, the intervention included face-to-face ACP discussions and a review of AD with a total of 40 patients (20 hospitalized and 20 clinic patients), and their family members. **Study Design:** Descriptive study design. **Results:** Increased ACP discussions and AD completion in both settings (inpatient and clinic). Post intervention 13/20 (65%) inpatient, and 8/20 (40%) of the outpatient setting patients completed AD as compared to 5% inpatient and 0 % outpatient pre-intervention. Additionally, there was an increase in the change of code status 5/20 (25%) post intervention from 3/20 (15%) pre-intervention of admitted patients, and completion of OOHDNR form from 0% pre-intervention to 2/20 (10%) post-intervention of the outpatient setting patients. **Conclusion:** The results of this project show that The ACP discussions with an APP were successful and enhanced patients understanding of their values and goals of care. Additionally, these discussions helped the patients in completion of the AD documents, and a change in the code status to DNR. **Recommendations:** ACP conversations, when done early and throughout the patients illness, not only improve end-of-life outcomes, but also help patients adjust to their illness, hence ACP is a critical component of patient-centered care. APPs are in a unique position to help patients and family to make decisions when it comes to ACP/EOL decisions, hence, APPs can take the lead in initiating these discussions.

JL705

Bridging the Practice Gap in Oncology for Advanced Practice Providers

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Purpose: Examine the national clinical issue of a practice gap by advanced practice providers (APPs) new to the oncology specialty. A practice gap is defined as the education, knowledge, and skills of a generalist APP entering the oncol-

ogy specialty with little or no oncology education, knowledge, or skills. The rationale for phase one of this continuous quality improvement project is to discover how best to close this practice gap by enhancing existing orientation process. **Design:** The major design method was a descriptive study to assess an existing orientation process at a large oncology practice. **Methods:** An anonymous online survey with 47 questions was emailed to 35 advanced practice providers. **Findings:** Out of 35 participants invited to partake in the survey, 17 completed the survey. Discovered current orientation process is desired and considered helpful with specific suggestions for improvements identified. **Conclusions:** An enhanced orientation process is needed. Review of results in phase one of this continuous quality improvement process identified opportunities for improving the current process. **Clinical Relevance:** The need for better-prepared APPs to enter the oncology workforce and practice safely involves more than just graduating from an advanced practice program. Formal training is necessary to assist the new APP entering the complex field of oncology. **Discussion:** This work outlined above was phase I of an ongoing, continuous quality improvement initiative. Our organization is now in Phase II which involves adopting this program in other select specialties within a large healthcare organization. The author plans to provide resources and discuss progress, issues, solutions to attendees in person (live) to conference attendees in an effort to disseminate findings and provide support to other organizations adopting a similar program.

JL706

Chimeric Antigen Receptor (CAR) T-Cell Therapy and Educating Advanced Practice Providers: Lessons From a Distance Learning Activity

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Background: Chimeric antigen receptor T cell (CAR T) therapy is a quickly expanding immunotherapy in the hematologic oncology field. As an increasing number of cancer centers are beginning to offer CAR T therapy services or expanding these services into outpatient settings, there

is a growing need for more education tailored to the full multidisciplinary cancer care team. This is especially true for advance practice providers (APPs), who may play a pivotal role in CAR T therapy delivery or patient management. **Methods:** In August 2018, the Association of Community Cancer Centers hosted a live webinar for the multidisciplinary team, including APPs, titled “CAR T-Cell Therapy: What We Know (and Don’t Know) 1 Year Later.” The webinar was then made available on-demand. Pre- and post-activity knowledge questions were administered to both live and on-demand participants to measure gain of specific knowledge and competencies related to CAR T therapy. In addition, a follow-up survey was administered to live and on-demand participants within eight weeks of completion date to measure similar knowledge gains and behavior change. Results from both the pre- and post-activity knowledge questions, as well as follow-up survey, were then analyzed to better understand the impact of the activity. **Results:** From August 2018 to July 2019, 249 individuals participated in the distance learning activity (83 live, 166 on-demand). Participants included physicians (33%), oncology nurses (10%), clinical pharmacists (6%), and APPs (7%). APPs were the only group to participate exclusively via on-demand and achieved an average pre-activity knowledge score of 47%, which was higher than other groups (physician=35%; oncology nurses=40%; clinical pharmacist=43%). Similarly, of all participants who answered the post-activity knowledge questions, APPs (n=4) represented the highest average increase in knowledge with an average score of 31% compared to other groups (physicians, 28%, n=19; oncology nurses, 21%, n=6; clinical pharmacists, 25%, n=5). Two of the participating APPs completed the eight-week follow-up survey, and both respondents indicated that the activity “somewhat” impacted their knowledge and behavior related to CAR T therapy. Similar results were seen among oncology nurses and clinical pharmacists. However, higher follow-up engagement and greater perceived impact was seen among physician participants. **Conclusions:** While the pre- and post-activity knowledge scores show strong results from APPs, overall engagement and perceived impact of the educational activity highlight more pertinent findings. Spe-

cifically, APPs only represented a small number of total participants, only accessed the activity via on-demand, experienced significant drop-off for follow-up activities, and did not feel the activity had much impact on their clinical practice. **Recommendations:** These findings should be taken into consideration in the development of future educational activities for APPs, particularly as it relates to CAR T therapy. For example, activities may need to be tailored to offer on-demand options, incorporate different approaches for follow-up, and include faculty, content, or objectives more specific to the APP audience. Overall, more research is needed to better understand these approaches and their reception among APPs as CAR T therapy is still in early stages of implementation and will require ongoing education.

JL707

Clinical Implications of Molecular Analysis for Advanced Practice Providers Caring for Newly Diagnosed Acute Myeloid Leukemia Patients

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Purpose: Acute myeloid leukemia (AML) patients can have several genetic mutations that allow for risk stratification, prognostication, and yield actionable information that can guide treatment decisions. Our goal is to educate the APP on the importance of genetic mutational analysis in newly diagnosed AML patients and to demonstrate clinical relevance. **Methods:** The evidence for this abstract was obtained through an extensive literature review (2014-2019) on the topic of gene mutations in AML. Discoveries AML is a heterogeneous myeloid malignancy characterized by acquired genetic alterations of the myeloid progenitor cell. Historically, the diagnosis was based on cytogenetic abnormalities alone. Conventional karyotyping reveals ~ 50% of newly diagnosed AML patients have normal cytogenetics. More recently, techniques such as next generation sequencing (NGS), have confirmed that AML has extensive molecular heterogeneity. These techniques reveal distinct patterns of cooperativity, mutual exclusivity, sub-clonal architecture, and clinical genetic evolution. In AML, 70% of patients with a normal karyotype

have at least one gene mutation detected by NGS; with an average of 3 mutations per patient. Both driver and cooperating mutations have been identified by the European Leukemia Net (ELN). These mutations contribute to disease progression/relapse and impact overall survival. Driver mutations are those that present in preleukemic stem cells. Cooperating or subclonal mutations typically develop later in the disease course. Sanger sequencing-based techniques were the first to show that a normal karyotype can still have mutations within key genes (e.g. NPM1, FLT3, CEBPA). There is need for more comprehensive molecular genetic profiling approaches, yet to date there is no consensus on approach or number of genes to evaluate. NGS-based gene panel assays have gained wide clinical acceptance and therefore justifies its use in AML. Genome-wide assays, although more comprehensive than panels, have not been fully validated and remain investigational. **Conclusions:** In patients with newly diagnosed AML, conventional cytogenetic analysis is still required per ELN and NCCN guidelines. Gene mutations, both driver and subclonal, both individually and coexisting, can impact clinical outcomes and prognosis. In addition, patients should undergo mutational profiling for at least the following gene mutations: NPM1, CEBPA, RUNX1, FLT3, TP53, ASXL1, BCR-ABL1, IDH1/2. The list of molecular markers will likely continue to increase as single gene testing is replaced with more comprehensive analysis. Having the ability to recognize specific genetic mutations in patients can also enable the diagnosis of AML with blast counts below 20%. Diversity in mutational and chromosomal alterations in AML has led to persistent challenges in defining prognosis. The ELN 2017 risk stratification guidelines integrate both cytogenetic and molecular features to divide patients into three prognostic risk groups (favorable, intermediate, adverse). **Implications:** The diagnosis of AML relies on technology that incorporates genetic evaluation. As treatment paradigms lean towards a more personalized approach, so must the trends in the care of AML patients. This can allow for risk prognostication and possibly guide treatment decisions. APPs play a vital role in the care of this patient population and must understand the importance of genetic mutational analysis in newly diagnosed AML patients.

JL708

Complementary Therapy and Quality of Life for Oncology Patients Receiving Outpatient Chemotherapy

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Background: Advanced Practice Providers (APPs) must help patients cope with the often-debilitating side effects of chemotherapy treatment to maintain or improve quality of life. Symptom management is vital to quality of life for those receiving outpatient chemotherapy treatment. APPs must be conscious of ways to alleviate symptoms associated with chemotherapy treatment such as pain, nausea, vomiting, fatigue, anxiety, stress, and insomnia. This study sought to examine how complementary and alternative medicine (CAM), specifically massage, yoga, meditation, and acupuncture, impact quality of life for patients receiving outpatient chemotherapy. **Methods:** For this study, a quantitative descriptive survey design was implemented, utilizing the English version of the European Organization for Research and Treatment of Cancer 30-item Quality of Life Questionnaire (EORTC QLQ-C30), version 3.0. The EORTC QLQ-C30 has demonstrated reliability and validity in assessing quality of life in oncology patients (EORTC QLQ-C30, n.d.). Twenty-nine participants aged 18-90 years old, proficient in English language and undergoing CAM along with their outpatient chemotherapy, were enrolled from an outpatient oncology practice. Participants completed the survey immediately following the CAM therapy and one week later. Data were analyzed using paired and independent t-tests, as well as, Spearmans correlation. **Results:** Participants reported an increase in physical functioning from the first to second survey, yielding an increase in mean score of 71.2 to 75.6, $p < 0.001$. Participants reported a decrease in symptoms of fatigue from survey one to survey two, with a decrease in mean score from 32.9 to 26.1, $p < 0.001$. While there was no statistically significant change in reported global health status/Quality of life, there was a slight increase in mean scores from the first survey to the second survey from 51.4 to 54.3, $p = 0.202$.

Spearman's rho was used to calculate nonparametric calculations. Spearman's rho revealed the number of CAM treatments is strongly positively correlated with social functioning $p < .007$, $r = 0.75$. **Conclusions:** Participants reported a statistically significant increase in their self-reported physical functioning, which included the ability to go for a short or long walk and the ability to carry out instrumental activities of daily living (EORTC QLQ-C30, n.d.). Patients also reported a statistically significant decrease in symptoms related to fatigue. While there was no statistically significant change in global health status/quality of life, participants maintained their mean quality of life scores, as well as, all other symptom and functional scales scores. The CAM treatments used by participants seemed to help in adaptation and coping regarding symptoms of cancer and treatment for cancer. Participants in this study showed an increase in physical functioning, as well as, decrease in fatigue and a decrease in symptoms related to financial difficulties. Additionally, quality of life remained steady from the initial CAM treatment to one week later. **Recommendations:** APPs who work with outpatient chemotherapy patients can safely recommend CAM treatments, such as acupuncture or massage, concurrently with their chemotherapy for the management of side effects, particularly fatigue, and to maintain quality of life. Additional studies on CAM treatments could benefit chemotherapy patients.

JL709

Compressed Workweeks: A Model for Improved Work-Life Balance and Retention of Oncology Advanced Practitioners

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Background: The Bone Marrow Transplant (BMT) Advanced Practitioner (AP) service at the Fred Hutchinson Cancer Research Center/Seattle Cancer Care Alliance provides high-level care to complex patients in inpatient, outpatient, and specialty clinic settings. Contribution from APs is integral to the consistent

success of the program. Citing poor work-life balance largely attributed to excessive hours worked, approximately one-third of APs resigned around 2015. This staffing crisis resulted in significant workforce loss with many years of highly valuable BMT and institutional knowledge. In 2017, we implemented a comprehensive schedule modification which aimed to maintain excellent patient care while improving work-life balance and retention of APs by transitioning to shorter workweeks. **Intervention:** We reviewed models in 5 major BMT centers and found that all had compressed workweeks. A schedule was designed with the following goals: maintain quality and continuity of patient care, preserve flexibility for APs to work in different settings, decrease moonlighting, limit excessive hours, and improve AP work-life balance and retention. The inpatient schedule consists of buddy pairs sharing a cohort of patients. The outpatient model is 4-day workweeks with additional rotations covering scheduling gaps and weekends. To support these changes and limit reliance on non-BMT AP staffing, the total number of APs increased. **Effects:** A survey of APs in 2017 who had been employed before and after the scheduling modification demonstrated that 88% said the work environment was very or moderately improved. Moonlighting cost in the 6 months pre- and post-implementation dropped from a monthly average of \$38,200 to \$16,400, a 57% decrease. Retention data show statistically significant improvement ($p=0.037$): in FY15 AP turnover rate was 22.2% ($N=36$), while in FY19, the turnover rate dropped to 7.1% ($N=56$). **Conclusions:** BMT APs at our center successfully transitioned to a scheduling model with shorter workweeks which resulted in more appropriate hours worked, better work-life balance, and improved retention rates. During this transition, we maintained excellent quality of care for our patients, reflected in the fact that our center is one of only 5 out of 177 transplant centers nationwide to achieve higher-than-expected survival rates. The upfront cost of this scheduling change has been mitigated by less reliance on moonlighting and improved retention rates (it is estimated that replacement of an AP costs at least \$250K). The preservation of

clinical and institutional knowledge is extremely valuable and, though difficult to quantify, certainly contributes to improved care for patients. **Recommendations:** An impending shortage of US oncologists is predicted given an aging population, higher cancer prevalence, and rapidly expanding therapeutic options. Oncology APs have been and will continue to be integral in team-based models providing high-level care to these complex patients. Centers should strive to support AP retention which can be achieved in part by limiting excessive hours and burnout by implementing a compressed workweek model. Future studies are needed to collect concrete data on work-life balance, hours worked, burnout, and retention rates to help justify the increased staffing required to support these schedule changes.

JL710

Current Response Rates in Phase I Clinical Trials of Novel Agents

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Background: Historically, response rates in phase I trials have been low, with overall response rates reported as low as 3.8% in patients with advanced solid tumor malignancies¹. Today, investigational agents targeting novel pathways have led to improvements in disease outcomes across the drug development landscape. As the goals of cancer therapy mimic those of non-lethal chronic diseases, prolonged periods of disease control emerges as an increasingly relevant trial endpoint. Recently, Italiano et al reported a median progression free survival time for phase I trial participants of 2.3 months in 180 patients assessed². We investigated current phase I trial response rates and duration of disease control for patients at the Winship Cancer Institute of Emory University. **Methods:** A retrospective analysis of 242 patients with solid tumor malignancies enrolled on phase I trials and evaluable for disease assessment was performed at our center. Patients enrolled on trials from January 2016 through July 2019 were assessed, and had to have had 1 or more radiographic evaluations

following treatment initiation. Phase I trials of both single agents and combinations of investigational drugs plus immunotherapy, chemotherapy or molecularly targeted therapies were included. **Findings:** We identified 242 patients enrolled on 39 trials for inclusion in the analysis. Objective responses by RECIST were seen in 16% (n=39) of patients, with 4% (n = 9) achieving complete response (CR) and 12% (n = 30) partial response. 38% (n=93) of patients achieved stable disease and 45% (n=110) had progressive disease. Median time to progression was 101 days (range: 27 - 1821 days) or 3.3 months. Additionally, 12% (n=29) had ongoing disease control at the time of this data analysis and have a median time on trial of 355 days (range: 71-1821 days) or 11.7 months. One patient enrolled on an immunotherapy trial continues in CR 5 years following treatment initiation. **Summary:** Our data demonstrate ongoing improvement in outcome for patients treated on phase I trials including higher response rates, longer disease control intervals compared to more historical analyses. Longer disease control is meaningful for patients. Establishing prolonged progression-free survival by even a few weeks has led to FDA approval of some agents for refractory, metastatic disease. Trials investigating novel therapies have led to fewer adverse events compared to traditional chemotherapy. Grade 3/4 adverse event (AE) rates on investigational trials have been shown to be 38%, lower than grade 3/4 AE rates with chemotherapy^{2,3}. As phase I trials are considered throughout treatment planning and are allowing longer treatment durations, manageable adverse event profiles are imperative. **Implications:** Phase I trials leading to prolonged time on treatment represent therapeutic options for many patients, especially in the metastatic, refractory disease setting. Advanced Practice Providers (APPs) collaborate with patients, researchers, and other clinicians to plan best therapeutic options and are well positioned to educate patients and caregivers on clinical trial options throughout their treatment journey. Phase I clinical trial enrollment is critical to bring new therapies to patients, advances the field overall, and increasingly offers therapeutic benefit for those patients enrolled in ongoing trials.

JL711

Development and Application of the Oncology Nursing Society (ONS) Oncology Nurse Practitioner Competencies

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Background: Prior to the second half of the 20th Century individual provider competency was evaluated through education and board certification. Competencies are used as a framework to help focus employees' behavior on things that matter most to an organization and help drive success; not only for the employer but also the employee. They can provide a common way to coordinate, select and develop talent. As Oncology Nurse Practitioners (ONP), our roles continue to evolve and additional skills may be needed or refined based on current evidence based best practices. While its important to track and manage skills specific to key jobs over time, competencies focus on qualities that can help individuals grow in their careers beyond the current position. **Methods:** The Oncology Nursing Society (ONS) first established ONP Competencies in 2007, outlining entry-level competencies essential for ONPs caring for adult patients with cancer. ONS convened an ONP Competency Project Team in January 2019 and met on weekly conference calls. The team included ONS members and a member representative from Advanced Practitioner Society for Hematology and Oncology (APSHO). The team began with an extensive literature review and established competency categories utilizing the structure from the most recent version of the ONS Oncology Nursing: Scope and Standards of Practice. Competencies were drafted and reviewed by the team. A public comment period provided opportunity for ONP feedback. The project team made edits to the document to further refine the competencies and to provide clarity using this public commentary. Further review was conducted using a group of five experts, chosen for their years of experience and perspective within the field of ONP practice, who were asked to comment on the ap-

propriateness, clarity, completeness, and flow of the overall competencies as well as provide feedback on individual statements. Based on their responses, edits were made, and a final list of 120 competencies was produced to define the role of the ONP in practice today. **Results:** The competencies provide a foundation for application in four areas of ONP practice. In the academic environment, students can draw on the ONP competencies to guide their clinical work and outline their future practice. Administrators in various practice environments can refer to the ONP competencies when outlining position descriptions, on-boarding of new employees and in performance reviews. In clinical practice, the competencies may be used when clarifying job responsibilities, mentoring new APPs, and creating guidelines for NP practice. The ONP competencies are essential in clearly defining the role of the ONP when considering the scope of practice, advocacy for the role and in other areas of policy. **Summary:** The revised Oncology Nurse Practitioner Competencies from the Oncology Nursing Society have been developed following a careful process and can be applied in all settings of ONP practice.

JL712

Development and Implementation of a Pregnancy Screening Protocol for Women of Childbearing Potential Prior to Chemotherapy

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Background: Many cancer therapies currently available are teratogenic in nature. Unknowingly treating a pregnant patient is a preventable harm. Within our community, our ambulatory oncology infusion center has seen an increasing number of women of women of childbearing potential (WOCP). Pregnancy testing of these women within our oncology infusion center was sporadic at best. Additionally, there currently are no standardized guidelines related to pregnancy testing of these women available in the literature. **Methods:** A retrospective chart analysis of WOCP receiving chemotherapy was done to determine baseline pregnancy screening rates. Based on available literature, WOCP was defined as women under 50 years of age, without a history of hysterectomy or tubal ligation. Through collaboration with pharmacy, nursing, and providers, a nurse-driven protocol was de-

veloped that allowed the infusion nursing staff to order a pregnancy screen to be done within the infusion center if testing had not already taken place within 48 hours of initiation of treatment. Following protocol implementation a retrospective chart analysis was performed to re-examine screening rates. **Results:** Utilizing patients with an active treatment plan within a one month time period, retrospective analysis of pregnancy screening prior to initiation of chemotherapy was performed. Baseline pregnancy screening rate was 21%. Point of care pregnancy equipment was obtained and nursing staff was educated on the protocol which included a medical delegation. Post-implementation chart analysis of WOCP initiating chemotherapy within a six-week timeframe resulted in improved pregnancy screening to 57% compliance. **Conclusions:** Utilization of a multi-disciplinary team, facilitated the successful development of a protocol to improve patient safety. Implementation of a medical delegation protocol for pregnancy screening in WOCP allowed nursing to initiate pregnancy screening for patients leading to improvements in the safety and quality of patient care provided.

JL713

Development of Radiation Oncology Nurse Practitioner Competency for Fiberoptic Nasopharyngology

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Background: One radiation oncology (RO) department sought to expand access for head and neck (HN) RO patients. The department identified an opportunity to transition patients in the post-acute stage of care into a survivorship model and hired a new nurse practitioner (NP) to be a full-time (HN) disease-site specific RO NP. To competently practice independently, the NP needed to be able to perform fiberoptic nasopharyngology (NPL scoping) for visualization of treatment-related morbidities, as well as disease surveillance. There was no outlined competency for this procedure for physicians, as it is considered part of their formal medical training. For hospital credentialing, because scoping is not part of normal NP training, the department had to develop a NPL competency. The departments Clinical Nurse Specialist (CNS) was deemed most appropriate for the development

of the competency. CNSs are licensed advanced practice nurses who focus on a specialty defined by population, disease, setting, type of care, or type of problem. The CNS works within the three spheres of influence- patient, nurse, and system to promote quality and safety of care using evidence-based practice. The CNS has advanced education that helps them support nursing staff, including NPs. CNSs are skilled at finding evidence-based guidelines and developing evidence-based practices that fit with the environment. **Methods:** The CNS sought existing competencies for NPL scoping in RO in the literature, reviewed health system policies, contacted interdisciplinary team members, such as speech therapy, who also do NPL scoping, and reviewed the literature for interdisciplinary guidelines for assessing the competency of NPL scoping. **Findings:** The CNS acquired hospital approved competencies for a different type of NPL scoping from speech therapy and found guidelines from the American Society for Gastrointestinal Endoscopy which recommended a minimum number of NPL scoping to be assessed for competency. **Evaluation:** The CNS collaborated with the head and neck attending Radiation Oncologists to validate the competency assessment tool based on the exact needs of the departments equipment, specifics from the speech therapy competency, and recommendations from the American Society for Gastrointestinal Endoscopy. The NP completed the competency with reports from the attending physician's who signed off on witnessing the NPs NPL scoping attempts as independent; no complications within the three months of orientation. In the 10 months of practicing independently, there have been no complications with the NP independently performing NPL scoping. **Recommendation:** As NPs are allowed to practice to their fullest scope to meet the healthcare demands, health systems have to create new ways to validate and document that NPs can safely perform tasks in a way that is not always required for physicians. The CNS can partner with NPs to create evidence-based competencies that are measurable and realistic. In the future, this RO department will use the CNS to collaborate with experts to develop discipline-specific competencies that are evidence-based and align with department policies; we recommend all oncology departments have access to CNSs to support the development of competencies.

JL714

Discharge Status and Post-Discharge Costs After Skeletal-Related Event (SRE) Hospitalizations Among Medicare Elderly Patients With Bone Metastasis (BM) From Solid Tumor (ST)

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Background: Although studies using commercial claims databases have shown that inpatient hospital costs for treating SREs are high in adults with BM,^{1,2} there is a scarcity of data on costs associated with post-SRE care, especially in older adults. We aimed to understand discharge status and post-discharge costs after SRE hospitalization in Medicare patients with BM from ST. **Methods:** We assembled study cohorts using 2011-2015 Medicare 20% sample data. We identified patients with ST and BM diagnosed between January 2011-June 2015 followed by an SRE-related hospitalization (index hospitalization) with a discharge date (index date) between January 2011-September 2015. We further required patients to be alive and aged 66 years at the index date and continuously enrolled in Medicare fee-for-service part A/B for 12 months preceding the index date. We excluded BM patients with 2 solid tumors. We assessed demographics at the index date and comorbidities during the 12-month baseline period. Follow-up was from the index date to the earliest date of death, end of Medicare enrollment, or December 31, 2015. Discharge status after index hospitalization was defined as admission to: skilled nursing facility (SNF), rehabilitation facility, hospice, home health agency (HHA), long-term care facility (LTC), or rehospitalization. Duration in days at each facility was calculated. Mean total Medicare allowable costs at each facility was assessed at the patient level and adjusted to 2015 US dollars. **Results:** We identified 7988 first SRE-related index hospitalizations with living discharge. Mean (standard deviation [SD]) age was 76.9 (7.3) years; 49.6% were female, 88.0% white, 8.1% black; mean (SD) Deyo-Charlson index was 9.4 (1.9), and mean (SD) index hospitalization duration 8.2 (8.9) days. After discharge, 32.9% (2629) of patients were ad-

mitted to SNF, 74% (588) to rehabilitation, 13.5% (1076) to hospice, 13.7% (1094) to HHA, 0.6% (47) to LTC hospital, 11.3% (904) to LTC nursing home, 9.4% (754) were re-hospitalized within 30 days, and 11.2% (896) were discharged to other locations. Mean (SD) length of stay in days by discharge location were 40.5 (50.1) for SNF, 15.5 (10.3) for rehabilitation, 25.9 (60.0) for hospice, 67.7 (86.9) for HHA, 28.2 (20.7) for LTC hospital, 65.7 (152.2) for LTC nursing home, and 6.9 (7.4) inpatient days for those re-hospitalized within 30 days. Mean (SD) cost per patient was \$23,801 (\$22,277) for SNF, \$25,312 (\$14,931) for rehabilitation, \$6781 (\$10,449) for hospice, \$18,101 (\$25,443) for HHA, \$46,479 (\$36,832) for LTC hospital, \$15,436 (\$35,768) for LTC nursing home, and \$17,007 (\$18,417) for re-hospitalization within 30 days. **Conclusion:** Medicare patients with SRE-hospitalizations incur further resource use and costs post-discharge. Management of SREs post-discharge from hospitals is economically significant in elderly patients. **References:** 1. Barlev A, Song X, Ivanov B, Setty V, Chung K. Payer costs for inpatient treatment of pathologic fracture, surgery to bone, and spinal cord compression among patients with multiple myeloma or bone metastasis secondary to prostate or breast cancer. *J Manag Care Pharm.* 2010;16(9):693-702. 2. Hagiwara M, Delea TE, Chung K. Healthcare costs associated with skeletal-related events in breast cancer patients with bone metastases. *J Med Econ.* 2014;17(3):223-230.

JL715

Early Outcomes of an Initiative to Increase BRCA Testing Among NCCN Guideline-Eligible Breast Cancer Patients in a Large Community Oncology Practice Setting

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Background: The presence of pathogenic variants in BRCA1 or BRCA2 can affect many aspects of a breast cancer patients care: surgical decisions, medical treatments, preventative interventions, screening, and family counseling. Approximately,

one-third of breast cancer patients are eligible for NCCN Guidelines–concordant BRCA testing. However, national data suggests provider non-adherence to guidelines with only one-third of eligible patients referred for genetic services. In 2018, OHC (Oncology Hematology Care, Cincinnati, OH) launched an APP-centric genetics program. Specially trained APPs carry out genetic counseling and order NCCN-compliant genetic testing. Early data suggested a significant deficit in the number of physician driven referrals. From 1/01/18 - 07/31/18, 138 patients were estimated to have been NCCN guideline–eligible. Only 28 (20%) patients received genetic services. **Methods:** The OHC genetics team implemented a standardized screening process for every new breast cancer patient. Providers were updated on NCCN BRCA-testing guidelines. An EMR template (US Oncology, iKnowMed G2) that includes NCCN guidelines was created for initial breast cancer consultation and Oncology Care Model treatment planning. All patients, not just OCM-eligible patients, are subject to APP-led OCM treatment planning. If a patient meets NCCN criteria for testing, a referral is reflexively placed for counseling and testing. Manual audits measure adherence. This 2-year pilot is funded through a competitive grant from Pfizer/ACCC and endorsed through our partnership with US Oncology. **Results:** From 01/01/19 - 07/23/19, 146 new breast cancer patients met NCCN criteria for BRCA testing. 65 (45%) eligible patients had appointments with the genetics team. 30 (20%) received testing outside of our practice. 35 (24%) refused appointments. 16 (11%) did not have appointments and represent screen fails. Referrals in non-breast cancer patients increased by 138% suggesting a possible halo effect. **Conclusions:** The breast genetics appointment rate has increased 2.5-fold compared to the same timeframe in 2018. Preliminary data suggests that physicians and APPs given training and EMR templates embedded with the NCCN guidelines for reflex genetics referral can appropriately increase the utilization of genetic services. **Recommendations:** Early data demonstrating increased screening and referrals is encouraging. Gains must be sustained for the project to be deemed a success worthy of scaling. Success in BRCA testing in breast cancer will lead to expansion to other cancers and genes. Manual audits are not sustainable. In part-

nership with US Oncology/McKesson, plans to create structured genetics data fields to automate data collection within the EMR are ongoing. From an advanced practice perspective, APPs are involved in every aspect of grant execution: planning, education, screening, provision of genetics services. Opportunities are emerging to better understand why patients refuse testing, and to evaluate the appropriateness and quality of outside testing and counseling. Integration of genetics screening into universal OCM treatment planning is a unique approach not identified in current literature.

JL716

Findings from the Bone Health Education Needs (BEACON) Assessment Study: A Survey of Multiple Myeloma and Bone Metastatic Solid Tumor Patients at Risk for Skeletal-Related Events

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Background: Patients diagnosed with solid tumors (STs) with bone metastasis and patients with multiple myeloma are at an elevated risk for painful and irreversible skeletal-related events (SREs) including bone fractures, spinal cord compression, and radiation and surgery to the bone¹. Recent improvements in cancer therapies mean that patients are living longer with the risk of SREs, yet real world data suggest that only about half of eligible patients ever receive treatment with a bone targeting agent^{2,3}. In this study, we aimed to understand the current state of awareness regarding bone health in cancer patients at risk of bone complications to identify potential gaps in education for these patients. **Methods:** The Bone Health Education Needs assessment (BEACON) survey was developed through a partnership between GRYT Health, LLC and Amgen, Inc. A unique direct-to-patient approach was used to collect patient survey data utilizing GRYT Health's digital platform and cancer community. Four patient populations at risk of SREs were recruited: multiple myeloma (MM) and bone metastatic (BM) breast cancer (BrC), prostate cancer (PrC), and lung cancer (LC). Both SRE-naïve and patients who had experienced an SRE prior to participation were recruited. The survey included questions about demographics, cancer diagnosis

and treatment (timing of cancer diagnosis, prior treatments, frequency of interaction with care providers), and cancer-related bone health education (knowledge of general cancer bone health and bone health protection, sources and timing of education, treatments discussed and/or received, and overall satisfaction with bone health education). Patients were also given the opportunity to elaborate on their experiences with bone health and related education in open-ended questions. Survey responses were described for patients overall and by primary cancer type. **Results:** A total of 28 patients completed the survey. Overall, 61% (n = 17) had experienced at least one SRE (bone fracture: 43%, spinal cord compression: 29%, radiation to the bone: 50%, surgery to the bone: 29%). Levels of bone health knowledge were moderate to low, with patients on average reporting knowledge of 3 (of 6 total) educational messages related to general cancer bone health, and only 2 (of 4) educational messages related to bone health protection. MM patients specifically reported the lowest levels of bone health knowledge (25% reported knowledge of at least 3 educational messages), and BrC patients reported highest levels (71% reported knowledge of at least 3 messages). Nurse practitioners and oncologists were most commonly reported as the source of bone health information, with similar findings for all subgroups. Patient-reported satisfaction with the amount of information received about bone health since cancer diagnosis was low, with 71% of patients reporting receiving either no information or less information than desired related to cancer bone health. **Conclusion:** In this survey of cancer patients at risk of SREs, substantial gaps in knowledge and education related to bone health were observed. The gaps in education identified here should be addressed through patient- and provider-oriented educational interventions to increase opportunities for communicating ways to prevent painful and irreversible SREs.

JL717

Ginseng for Management of Cancer-Related Fatigue: An Integrative Review

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Background: Cancer related fatigue (CRF) is one of the most prevalent, debilitating symptoms af-

fecting a majority of cancer patients worldwide. The prevalence of CRF is up to 99% of cancer patients and it can persist for 10 years post treatment. CRF can lead to poor compliance with anti-cancer therapy and lead to discontinuation of treatment. Current management strategies for CRF center around activity and exercise, however, these strategies can be challenging for many patients undergoing active treatment. Ginseng has been shown to improve CFR and may provide benefit for patients suffering from CRF. **Methods:** The electronic databases of PubMed and Scopus were searched using the following keywords: ginseng, cancer related fatigue, Asian ginseng, American ginseng, quality of life, and fatigue. Five studies were identified for this review: four randomized, control trials (RTC) and one retrospective review. **Results:** Three studies included examined the use of American ginseng for CRF; two of these studies report that American ginseng significantly improved in CFR at doses of 2000mg daily across multiple different cancer types; the third study using American ginseng reports a trend for improvement of CRF in the cohort using 2000mg daily, though, the results were not statistically significant. Those studies which using Asian ginseng species (n=2) reported no statistically significant improvement in CRF. One study assessed combination therapy with American ginseng and methylphenidate; this combination yielded a significant reduction in fatigue score ($p < .0002$). Cancer types included in all studies consisted of the following: breast, colon, prostate, thoracic, hematologic, carcinoid, endometrial, melanoma, pancreatic, lymphoma, head and neck, and other. Duration of ginseng therapy ranged from 29 to 56 days. The majority of patients included across all studies were on active cancer treatment. Minimal side effects are observed with either American or Asian ginseng species. **Conclusions:** There is data to support the use of American ginseng to treat CRF. No grade 3 or 4 adverse events or adverse pharmacological interactions were reported in any of the 5 published studies included in this review. Recommendations: Advanced practice providers (APPs) should assess for CRF at regular intervals in all cancer patients. Large-scale randomized, controlled trials are needed to validate these findings and determine optimal dosage and duration of therapy. APPs are well poised to carry out such research.

JL718

Immediate and Long-Term Health Benefits of a Wellness Coaching App in Breast Cancer Survivors

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Background: Breast cancer survivors are at increased risk of cancer recurrence, second malignancies and other co-morbid conditions. The American Cancer Society recommends that survivors maintain an optimum weight, try to follow a plant based diet and increase weekly physical activity. However, many cancer survivors have difficulty following these recommendations and cancer programs struggle with ways to support survivors in these endeavors. The goal of this Advanced Practice lead study was to examine if use of a convenient and commercially available product that gives users access to a health and wellness coach, the Vida Wellness Coach App®, by breast cancer survivors is more effective than a self-guided toolkit and one time health education session in: Improving adherence to a plant based diet, increasing physical activity, assisting with weight loss and a reduction in BMI, reducing elevated depression and fatigue scores, leading to sustained adherence to lifestyle and wellness plan at and beyond six months. **Study Design:** A pre-post repeated measures, two group design was utilized involving 150 subjects. The Vida arm received a survivorship care plan and enrolled in a six-month subscription to the VIDA Wellness Coaching app. A control group received the same information, but instead of the VIDA intervention were given a self-guided toolkit. Women over 18 with curative intent breast cancer were included in the study. **Results:** At Six Months 61 subjects on the self (toolkit) arm and 66 on the Vida arm completed the full 6 month intervention as well as weights and surveys. **Weight Gain/Loss:** More patients in the Vida group experienced weight loss and had a greater reduction in overall body mass index (BMI). The difference in weight loss for the Vida group was statistically significant ($P=.01$). **Physical Activity:** The 4 item Godin-Shephard Leisure-Time Physical Activity was used. The Vida group demonstrated statistically significant improvements in strenuous physical activity, ($P=.003$). **Healthy Diet:** Adher-

ence was assessed using the Rate Your Plate tool. The Vida group had a highly statistically significant improvement in their dietary patterns ($P < 0.001$) compared to the self arm. **Fatigue:** The Visual Analog Fatigue Scale was used and showed that the Vida group had a greater reduction in fatigue. **Depression:** Presence of depression was assessed using the Patient Health Questionnaire -2. More in the Vida group experienced an improvement in their depression but the change was not statistically significant ($P=0.359$). One Year Follow Up Only 41 of the 127 remaining subjects replied at one year. None were still using the Vida app, most citing the monthly cost. Many of the VIDA participants were still following their wellness plan and had maintained their weight loss or lost more weight, although outliers in both groups and the low rate of response made it difficult to evaluate results. **Conclusion:** The results of this Advanced Practice lead study demonstrated that a live coaching wellness app that provides wellness coaching can offer motivated breast cancer survivors and cancer programs a modality that offers convenient, effective support at a reasonable cost.

JL719

Implications for Advanced Practice Providers in Management of Neuroendocrine Carcinoma and FDA-Approved Lutetium Lu 177-DOTA-Octreotate Peptide Receptor Radionuclide Therapy

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Background: Neuroendocrine carcinomas (NETs) are biologically diverse tumors arising from neoplastic neuroendocrine cells. Symptoms occur by stimulation of hormone hypersecretion and vary dependent on the endocrine organ involved and the spread of the disease. Treatment options have traditionally been limited and solely focused on tumor stabilization and symptom management. Symptom reduction and slowed tumor growth is achieved by blocking excessive serotonin production with SSAs. SSAs have been the primary treatment for carcinoid syndrome associated with neuroendocrine tumors 7, 8. The recent FDA approval of Lutetium Lu-177 DOTA- octreotate Peptide Receptor Radionuclide Therapy (PRRT) can po-

tentially offer neuroendocrine patients prolonged disease stabilization and symptom management in SSA refractory patients. PRRT involves an intravenous infusion of a somatostatin analogue that is bound to a radionuclide, typically Yttrium-90 or Lutetium-177. This delivers a cytotoxic dose of radiation to cells with somatostatin positive receptors, which are excessive in NETs. PRRT therapy proposes future implications for the Advanced Practice Provider (APP) including patient education of approved use, safety profile, screening and evaluation of appropriate patients, coordination of care, and symptom management. **Approaches:** The International Atomic Energy Agency, Oncology and Dosimetry Committees and the Society of Nuclear Medicine and Molecular Imaging collaborated in 2013 to develop clinical guidelines and provide guidance for patient selection, implementation, and evaluating outcomes. Patients are screened for clinical parameters including renal, hepatic, and bone marrow function. Once accepted, the patient is admitted for 23 hours observation. Patients are administered standard anti-emetics followed by an amino acid solution for renal protection prior to administration of the radionuclide compound. The amino acid administration is followed by the radionuclide compound infused over approximately 30 minutes followed by additional amino acids to prevent dose limiting renal toxicities of the radiolabeled compounds. Patients typically receive PRRT infusions every 2 months for 4-6 total doses. PRRT gained FDA approval in the United States on January 26, 2018. A large academic research facility located in the mid-east initiated a patient registry once PRRT was FDA approved and accrued 38 initial patients. The patients were prioritized by symptom severity and remaining viable treatment options. The facility initiated PRRT in February 2018 and to date, 36 patients have received at least one dose of PRRT. **Outcomes:** Two patients died from disease while waiting for treatment. Six patients died after receiving at least one dose of PRRT therapy due to co-morbidities, respiratory failure, fall complications, and/or treatment complications. Two patients developed myelosuppression precluding further dosing. **Summary:** PRRT can offer neuroendocrine patients symptom reduction and deceleration in tumor growth. APPs have been in-

volved in every stage of development and delivery of PRRT therapy to patients as well as post therapy monitoring and management of symptoms.

Implications for APPs: A dedicated Neuroendocrine APP clinic could potentially reduce the facility's current 6-month wait list by identifying and evaluating appropriate patients, streamlining intake procedures, interacting with payer sources, and addressing patient needs.

JL720

Increasing Compliance of an Oral Oncolytic Program in a Multi-Location Practice

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Background: Over the past two decades the rise in number of oral oncolytics has significantly changed the landscape of cancer treatment. Although these medications offer patients the convenience of home administration, they pose different challenges. Two examples are adherence and education of associated toxicities. In an ongoing effort to provide quality cancer care, the Central Jersey Division of Regional Cancer Care Associates (CJD RCCA) has reconstructed its oral oncolytic program. **Methods:** In 2016 the CJD RCCA developed an oral oncolytic program to educate patients on how to safely manage their medications. After the provider sent the prescription, a flowsheet is entered into the EMR, triggering the chemotherapy teaching session and appropriate follow up visits. During this visit patients are provided drug specific educational sheets which include lab monitoring, common adverse effects, and calendars to document adherence. Due to failure of entering flowsheets into the EMR, patients lost to scheduling while waiting for medication delivery, or patient refusal of teaching, compliance remained low. The program was modified to include running a daily report to identify all new oral oncolytic prescriptions. Schedulers are immediately calling patients to schedule a teaching session. A field in the EMR was created to document patient refusal. By making these improvements, CJD RCCA has increased compliance along with upholding quality care for patients receiving oral oncolytics. **Results:** Since re-struct-

turing the program the RCCA CJD APNs have performed teaching on 124 of 172 (72%) patients from January to May of 2019. This is compared to only 79 of 144 (54%) in all of 2018. Of the patients identified in 2019 30 refused, 13 were completed by the physician, and 5 expired. This dramatic rise of 18% is largely due to running the daily oral oncolytic reports and entering the flowsheet into the EMR. **Conclusions:** Patient compliance has increased by identifying new patients and prompt enrollment into the program. It provides them the tools to safely navigate through treatment. At CJD RCCA, the oral oncolytic program is vital to ensuring positive clinical outcomes for these patients.

JL721

Interprofessional Collaboration to Develop Patient Education Tools for Oral Oncolytics

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Background: The process for treatment planning, ordering and administration of oral oncolytics often differs from other routes of medication administration in oncology. Although many centers have established processes for patient education and administration of parenteral therapy through the infusion suite, patients receiving oral therapies may obtain and take their medications independent of these long-standing processes, requiring a system for oral oncolytic education and adherence monitoring. Advanced practice providers, nurses and pharmacists are often key in providing patient education for oral oncolytic therapies. A need was identified for clear, concise and unbranded educational tools for those working with these patients.

Methods: An interprofessional collaboration was formed between the National Community Oncology Dispensing Association, the Hematology/Oncology Pharmacy Association, the Oncology Nursing Society and the Association of Community Cancer Centers to design, create, and distribute sheets for patient education of oral oncolytics. As new drugs are approved, a pharmacist writes

a sheet based on the designed template. Sheets are reviewed by nurses and pharmacists and undergo copy editing and layout. Completed sheets are posted to an open-access website. The educator can freely access the website, add patient-specific information or instructions on the PDF, and print the resource out for the patient to review. Each Oral Chemotherapy Education (OCE) sheet includes drug-specific content on approved uses, dosing schedule, food and drug interactions, safe storage and handling, side effects, pregnancy and contraception information, and further resources.

Results: Following the initial launch in March of 2018, access to the OCE sheets has continued to increase. In 2018, there were approximately 167,000 page-views, averaging 540-600 views per day, including approximately 70 new visitors each day. At the time of this abstract submission, over 90 drug sheets are available. The site has been viewed over 300,000 times in total and averages approximately 720 views per day. **Summary:** Through the process of interprofessional collaboration, unbranded patient education tools have been developed to support nurses, pharmacists and advanced practice providers educating patients on oral oncolytics.

JL722

It Takes a Team! Implementing United States Pharmacopeia (USP) General Chapter <800> Across a Healthcare System

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Context: In March of 2014, USP was introduced in its draft form as a proposed set of guidelines for the safe handling of hazardous drugs. During this time UHealth was actively seeking Quality Oncology Practice Initiative (QOPI) certification for its system Oncology Service Line including 5 hospitals across three regions within the state. Following certification, the QOPI steering committee promptly shifted focus to the proactive preparation for USP implementation, initially scheduled for July 1, 2018 (and later delayed to December 1, 2019). **Approach:** Considering the impact of this initiative was beyond the specialty of oncology, a robust interdisciplinary team was recruited, utilizing Bruce Tuckmans Team Development Model. During the forming stage, initial stakeholders

were identified including the specialties of pharmacy, nursing, leadership, information technology, value analysis, and supply chain within the three regions. This diverse group met routinely in person, as well as virtually. The team collaborated to interpret the USP guidelines and performed a gap analysis related to current practice differences among regions in addition to compliance with the guidelines. Extensive planning surrounding implementation of the program took place requiring the formation of subcommittees of subject matter experts. **Results:** Several key changes were implemented to ensure compliance. Stakeholders from several specialties took part in the development of a Safe Handling of Hazardous Drugs (HD) policy, as well as creation of an HD personal protective equipment (PPE) charts. These outline recommended PPE as determined by the HD class, route, and specific exposure (medication administration vs. contact of contaminated bodily fluids). A computer-based training module was chosen as the method of education. This was designed and disseminated to all staff with risk of potential contact with hazardous drugs or contaminated bodily fluids. Changes to medication labeling were standardized for all hazardous drug (HD) dispensing pharmacies. Several closed-system transfer devices (CTSD) were researched and a standard product was selected for use throughout the UCHealth system. Standardized door signage for easy identification of patients on HDs was also created. **Summary:** Aligning with Tuckmans performing and adjourning stages, the dedication of this dynamic interdisciplinary team to collaboration and prioritization of the safety of staff members successfully led to a multifaceted approach to compliance with USP guidelines. UCHealth has instituted this program at an additional 8 facilities it has since acquired. **Applications:** Recently there was a detailed review and revision of the policy, in addition to a taskforce developing ongoing annual competency training for staff. The next phase of this project is the consideration of medical surveillance of staff as encouraged by the USP guidelines. **Innovation:** When USP proposed a set of robust guidelines to enact for the safety of health-care workers, UCHealth prioritized this initiative, taking a proactive and progressive approach to prepare for implementation, even when other

large health systems across the nation were just beginning. This included the congregation and focused collaboration of a widespread, but dynamic team that spanned several facilities and regions to produce a successful program.

JL723

Lessons Learned from the Treatment of Sickle-Related Acute Vaso-Occlusive Pain Episodes During the National Intravenous Opioid Shortage

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Background: The use of intravenous opioids in sickle cell disease (including Hgb SS, SC, S-beta thalassemia, etc.) has become a mainstay of analgesic therapy during acute vaso-occlusive pain episodes (VOE). To reduce the burden and cost associated with emergency department visits and hospital admissions at our tertiary academic medical center, intravenous opioid therapy was made available in the outpatient infusion center beginning in 2006. In March 2018, an intravenous opioid shortage affected all healthcare delivery systems in the United States; we sought to determine how this shortage would affect several healthcare utilization endpoints. The team providing care for sickle cell patients consists of hematologists, advance practice providers including a physician assistant and nurse practitioner, sickle specific clinical nurse coordinator, and social worker. Advance practice (AP) providers are the primary team members seeing sickle cell patients for both acute pain episodes and chronic pain management in collaboration with a hematologist. **Methods:** This retrospective study included all sickle cell patients who received inpatient or outpatient care at the University of Washington between March 2018 and March 2019. For the 41 patients who utilized intravenous opioids in the outpatient setting at least once during the study timeframe, we determined the number of outpatient infusion hours, emergency department visits, and hospital admissions. **Results:** The utilization endpoints included March 2018 and March 2019 before and after the national opioid shortage: outpatient infusion hours decreased (359 versus 102), emergency department visits were similar (52 versus

39), and inpatient admission days decreased (41 versus 15). **Conclusions:** There was a 72% reduction in outpatient infusion hours and intravenous opioid use without a marked increase in ED visits or admissions over a one-year period. This reduction in utilization was attained by optimizing disease modifying agents such as hydroxyurea and transfusion therapies. Additionally, AP providers increased the number of outpatient visits with the focus on motivational interviewing and adherence with disease modifying therapies. During these visits, we engaged patients to understand and recognize the differences between intermittent pain, chronic pain, exacerbation of chronic pain, and acute VOE. AP providers utilized a multi-modal approach to treat chronic pain, which included physical therapy, psychiatry, orthopedics, integrative medicine, acupuncture, massage, and social work. Limitations included 1) 6 patients who transferred their care, 2) this study did not capture intravenous opioid use outside the University of Washington system. While some patients remained high utilizers of intravenous opioids, most patients had a dramatic reduction. **Recommendations:** Although the data is incomplete, we did not systematically replace intravenous opioids with oral opioids for the treatment of sickle cell related acute and chronic pain. Intravenous opioids are recommended for use for acute VOE in sickle cell disease in comparison with chronic sickle cell related pain where the role of opioid therapy remains unclear. A multi-disciplinary approach to treat chronic pain was successful in reducing reliance on intravenous opioid and in turn decreased utilization of the outpatient infusion setting.

JL724

Oncology Advanced Practice Provider Tumor Board: From Pilot to Expansion Across the Health System

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Background: Previously, we reported on an Oncology Advanced Practice Provider (APP) Tumor Board (TB) pilot implementation in a small community-based cancer center affiliated with a large academic institution. Common challenges for oncology APPs included sub-optimal oncology-specific education, and limited access

to sub-specialty collaboration. The pilot APP TB provided a successful avenue for APPs to share patient cases in a learning environment, increase collaboration, and implement evidence-based practice recommendations. Therefore, it was recommended by leadership to expand TB to include participation of all oncology APPs across the healthcare system cancer institute. Our purpose was to explore the 1) interest and feasibility of expanding Oncology APP TB to include oncology sites across the healthcare system, 2) characteristics of APP TB. **Methods:** A 15-item survey, consisting of multiple choice and 5-point Likert scale matrix table items, assessing oncology APP practice factors such as collaboration practices and utilization of traditional TB. Survey was sent via email to 123 APPs representing 10 locations and 11 departments. The APP TB was expanded to include all healthcare system oncology APPs. Demographics for these meetings were collected and include: attendance, case presentation diagnosis and rationale, recommendation summation and resources utilized. **Results:** Survey response rate was 42.3%. While 72% of responding APPs attend a traditional TB, 69.4% rarely or never bring a case to that TB. APPs utilize collaboration with APP peers and supervising physicians most often when making diagnosis or treatment decisions; they use traditional TB only ~35% of the time. Important factors in considering participation in APP TB were: increasing oncology patient care knowledge and keeping up to date with practice innovations. Five expanded TB meetings have been offered; an average of 3.4 cases were presented each month. As location was considered a barrier for participation, location rotated between two central sites and virtual presence through streaming services was offered. An average of 14 APPs attended monthly, including an average of 9 virtually. Most cases were presented for the purpose of sharing educational value. Greater than 50% of cases provided opportunities for discussion on supplemental educational information, including journal or UpToDate articles. Updated data collection will be presented for an additional 3 TB meetings. **Conclusions:** The expansion of the APP TB program has been valued and successful. Oncology APPs of varying age, experience, specialty, and location report increased

oncology knowledge, camaraderie, and collaboration with APP peers. APP TB is a novel way to stay up to date on current oncology practice standards and to improve access to a diverse group of APP peers despite distance in physical location. Alternating physical location of TB and offering virtual streaming allows collaboration across a large multi-site cancer center. Barriers to participation, including location and time of meeting and busy workload may contribute to relatively low attendance. **Recommendations:** Disseminate follow-up survey to assess participant satisfaction, suggestions for improvement, and ways to minimize barriers to participation and increase attendance. Oncology APP TB is an innovative forum for advancing oncology education and APP collaboration and should be considered at other facilities.

JL725

Oncology Advanced Practice Providers: Opportunities to Positively Impact the Opioid Epidemic

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Background: The opioid epidemic has had devastating effects on families and communities. Unfortunately, oncology is not excluded. Patients with cancer may present with current or past history of addiction, and/or they develop a substance use disorder (SUD) during treatment of their malignancy. Cancer patients with addiction have two life-threatening illnesses, and their support systems, including caregivers, family and friends, are also at risk for diversion or addiction. Addiction is a disease, not a character flaw; cancer patients with addiction are sometimes more challenging to effectively treat due to complex malignancy/chemotherapy related issues in addition to problems with compliance/adherence. Serious complications, such as infections, may occur if strategies for reducing patient harm are not implemented in at-risk patients. Harm reduction is the public health perspective of minimizing risk with the goal of decreasing negative consequences. Addiction is a complex, multi-factorial chronic disease requiring comprehensive management that our current cancer-care provider model is not capable of providing. Oncology providers are uniquely positioned to positively impact the management of

SUD, including the opioid crisis. **Approaches:** In June 2016, the lymphoma providers at the Ohio State James Cancer Hospital recognized substance use as a problem, leading to poor outcomes, and a multidisciplinary workgroup was formed focusing on strategies/interventions to improve outcomes. Ultimately a Harm Reduction program, including two health behavior counselors, was created, with the primary goal of ensuring completion of cancer care through expert psychosocial and clinical support. After six months of onboarding and further program development, a screening pilot utilizing the National Institute on Drug Abuses (NIDA) Tobacco, Alcohol, Prescription medications and other Substance use tool (TAPS) was implemented in all of the ambulatory lymphoma clinics (n = 7). The Prior to implementation of the screening pilot, a Qualtrics pre-survey was administered to lymphoma providers (physicians, oncology fellows, advance practice providers and pharmacists) via email. The pre-survey was 11 multiple choice questions, primarily focusing on substance use experiences and use of harm reduction strategies. **Findings:** The pre-survey was completed by 31 providers. One hundred percent of providers noted that they had encountered substance abuse sometimes (80%) or often (20%). Fifty-five percent of respondents (n = 17) had worked at their current position 1-5 years, with only 5 respondents having less than 1-year of experience. Fifty eight percent (n = 18) never or only sometimes asked patients about current or past history of substance use. Some knowledge gaps identified from the providers included: providing patient education, performing urine drug screens, and using controlled medication management forms (i.e. contract). **Conclusions:** For providers, these results demonstrate that knowledge deficits exist and that there is a need for additional education for screenings to achieve optimal outcomes. The opioid epidemic provides opportunities for multidisciplinary teams led by advanced oncology practitioners to implement tactics to improve the outcomes for patients, with a positive trickle-down effect on families and communities. Most or many oncology health care providers are unprepared for confronting substance use disorders. Future innovative strategies to improve SUD knowledge for current and future providers are needed.

JL726

Oncology Nursing Training: A Blended Teaching Approach in Resource-Limited Countries

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Background: Although cancer is a global health concern, resource-limited countries (RLCs) experience higher mortality and morbidity compared with high-income countries. Knowledge gaps and inadequate training are some of the many barriers to safe and effective patient care in RLCs. The concept of oncology nursing as a subspecialty does not readily exist in many RLCs, such as Kenya and Tanzania; many of the nursing staff instead learn essential clinical skills on the job with no structured training. Advanced practitioners are critical in identifying knowledge deficits and elevating oncology nurses clinical skills for positive patient outcomes. **Method:** We used a blended teaching approach (a combination of computer-led sessions and face-to-face interactions) to impart cancer education to the nursing staff working in the oncology departments at four hospitals in Kenya and Tanzania. Based on the needs assessments at each hospital, a team of U.S.-based oncology nurses and advanced practice providers prepared educational modules in oncology subspecialty training. The training focused on cancer biology, epidemiology, pharmacology, safe chemotherapy administration, side effect management, and patient education. Computer-based modules on these concepts, as well as face-to-face skills training on peripheral intravenous catheter insertion and care, central line care, extravasation and vesicant competency, and biohazard-conscious chemotherapy administration were conducted over a four-month period. Pre- and post-assessments were held for each training session, and clinical skills were evaluated in-person at the completion of the course using a skills checklist. Finally, a comprehensive

post-assessment was conducted immediately after the training, and again at 3- and 6-month intervals to evaluate knowledge gain and retention over time. **Results:** Of 21 participants across four sites, the mean scores for the first pre- and post-test were 71.43% and 90.48%, respectively ($p = .01$), showing a significant improvement in knowledge. The post-tests after course completion and again at the 6-month interval showed mean values of 88.28% and 89.30%, respectively ($p = .36$), indicating a sustained effect of our intervention and no diminution of knowledge at 6 months. After the initial face-to-face session for skills training, we conducted skills evaluations at 3- and 6-month intervals in a group session via video chat. The participants were knowledgeable at 3- and 6-month intervals and were able to verbalize the skills in group sessions. **Conclusions:** Blended teaching is an effective tool in improving knowledge, skills, and self-efficacy for clinicians practicing in RLCs. Advanced oncology practitioners can play an important role in assessing, designing, and implementing similar training courses in other areas of oncology, such as radiation, biotherapy, survivorship, and palliative care. The corresponding improvement in knowledge and skillsets could ultimately improve patient outcomes. **Recommendations:** Developing a structured oncology training program has implications for bridging knowledge gaps amongst clinicians in RLCs and promoting international knowledge exchange. This training could be embedded in nursing school curriculums or implemented as a short course in subspecialty training. We further recommend implementing the concept of blended teaching in other subspecialties.

JL727

Rare but Serious: A Resource to Facilitate Optimal Initial Management of Immunotherapy-Related Toxicities at Seattle Cancer Care Alliance

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Background: Immunotherapy has changed the landscape of cancer treatment. Multiple agents are approved for an expanding number of indications. Immune checkpoint inhibitors (ICIs),

including PD-L1/PD-1 inhibitors and CTLA agonists, are well-tolerated; however, grade 3 or 4 immunotherapy-related toxicities (IRT) occur in 5-24% of patients and can affect any organ system (NCCN, 2019). Advanced practitioners (APs) with varying levels of experience care for an increasing number of patients receiving immunotherapy (Cairo & al, 2017). We are often the initial point of contact for patients presenting with rare and potentially life-threatening IRTs. Early recognition and coordination of care is imperative to optimizing outcomes; however, challenges exist in clinical practice. We developed an online resource, inspired by a case of checkpoint inhibitor-associated autoimmune diabetes mellitus (CIADM), to help APs at Seattle Cancer Care Alliance (SCCA) recognize and manage rare IRTs including outpatient management when appropriate. **Approach:** The case below describes the initial outpatient management of CIADM and provides the framework we used to develop our resource: A 50-year-old male with stage IV lung adenocarcinoma presented for maintenance pemetrexed and pembrolizumab. He was premedicated with olanzapine and dexamethasone. Routine labs were remarkable for a fasting glucose of 330, normal anion gap, low TSH with normal T4. The patient had no complaints and an ECOG 0. When probed, he reported mild increased thirst and urination. His team held therapy and coordinated with endocrinology to start insulin in the outpatient setting and successfully avoided hospital admission. **Findings:** This case illuminates the challenges APs face when diagnosing and managing rare IRTs. CIADM is rare (frequency approximately 1%) and potentially life-threatening. Prompt triage of suspected diabetic ketoacidosis and initiation of insulin therapy are crucial to optimizing outcomes (Stamatouli, 2018). The presentation of CIADM may be different from classic insulin dependent diabetes mellitus and symptoms can be subtle (Tsang, 2019). Confounding variables, like premedication with corticosteroids and olanzapine or the presence of coexisting IRTs can delay diagnosis (NCCN, 2019; Tsang, 2019). Once CIADM is suspected, providers may order nonroutine tests and refer to remote consult services during the time constraints of clinical practice. Our goal is

to aid APs with recognition, management and care coordination of rare IRTs to provide high quality and cost-effective care. We created a table that combines national guidelines and institution-specific resources. We outline common and atypical presentation, other confounding variables, and institutional resources. Our resource will be posted electronically to facilitate reference and then expanded to include other IRTs. **Conclusions:** Managing rare but serious IRTs within a complex medical system is challenging. This institution-specific resource will provide a roadmap for APs of varying experience to help recognize, diagnose, and coordinate initial treatment to reduce morbidity, cost and optimize patient outcomes. **Recommendations:** We will post the resource electronically and will expand the framework to include other rare IRTs. Our table can be updated in collaboration with specialists and APs as appropriate. We recommend other institutions develop similar resources to help APs manage IRTs within their medical systems.

JL728

Redefining Survivorship for the Head and Neck Cancer Radiation Therapy Patient

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Background: The advanced practice provider (APP) is a skilled leader of survivorship care (SC) for radiation therapy (RT) patients. Head and neck cancer (HNC) patients treated with RT are prone to acute and late treatment effects, which may impact quality of life (QOL) and lead to increased morbidity and mortality if not properly managed. These often anticipated effects highlight the importance of incorporating skilled APPs into SC clinics, or clinics that focus on the physical, psychological, social, and spiritual aspects of persons with cancer. To our knowledge, there is currently no standard APP model of SC for RT within the United States. Commonly, APP SC clinics transition patients from their primary oncologist to the APP clinic after approximately two years post-RT. According to the National Comprehensive Cancer Network Survivorship Guidelines, an individual is considered a cancer

survivor from the time of diagnosis, through the balance of his or her life. We therefore sought to meet the patients' needs as a survivor from time of initial diagnosis and consultation, by piloting a unique APP model of SC at our institution within a HNC RT APP-led clinic, known as the JHH RO APP Model of Care (JRAMC). **Methods:** The algorithmic JRAMC (figure) was piloted at our institution within the HNC RT clinic over nine months. This model encouraged the APP to become involved in all stages of the HNC patients care: to meet with patients at time of consultation, manage patients during active RT, conduct post-RT symptom management visits at 2-6 weeks, conduct routine follow-up care, and as needed for new-onset HNC-related symptoms. Rather than transitioning the patient from the overseeing physician's care entirely, the APP was encouraged to schedule alternating visits with the overseeing physician as appropriate, supporting care collaboration between the RO, APP, and patient. The standard flow of clinic for the RO HNC overseeing physicians did not deviate from standard practice in any way with this piloted model of care. Our institution's analytic database, Oncospace, was used for analysis. Results The APP had 490 thirty-minute office visits (OV) in between November 1, 2018 and July 31, 2019. 310 (63%) of these visits included patients that were 2 years post-RT, signifying that only 37% of patients that required oncologic care may have been seen by an APP in current models. The APP was additionally involved in the acute care and management of 138 patients during active RT treatment, thus building trust and facilitating continuity of care into follow up while optimizing access to care. **Conclusions:** This pilot study illustrates the feasibility of integrating the JRAMC into practice, thus meeting the needs of the patient as survivor from time of diagnosis, while promoting trust with the APP and expanding access to care and promoting care continuity. **Implications:** We hypothesize the JRAMC may positively impact patient satisfaction, quality of life, morbidity, functional outcomes, and health-care system costs. We aim to incorporate this model to other disease sites within our department, and assess the impact of this model on these various outcomes.

JL729

Rewriting the Script: Moving the Care of the Acute Myeloid Leukemia Patient to the Outpatient Setting

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Background: Patients (pts) with newly diagnosed acute myeloid leukemia (AML) typically are admitted to hospital and remain inpatient for a month receiving intensive chemotherapy for 5-7 days and subsequent supportive care. We have become comfortable discharging pts after chemotherapy is completed (called early hospital discharge, EHD) (Walter et al). They then receive care in our outpatient clinic three times weekly and are re-admitted for complications, chiefly fever. **Method:** Our system relies fundamentally on collaboration among advanced practitioners (APs, including nurse practitioners and physician assistants), registered nurses (RNs), pharmacists, and physicians. This group fully utilizes our supportive care services and consultants. It has promulgated standard procedures and patient education centered on post chemotherapy issues such as febrile neutropenia, bleeding, pancytopenia, transfusion requirements, and prophylactic antimicrobials. Patients are given detailed contact information. As indispensable care providers, APs enable continuity by seeing each patient at least weekly and more frequently as needed. They conduct reviews of symptoms, manage complications, and when needed arrange urgent in-patient admissions. Visits with RNs with routine lab review occurs at least three times weekly. This multidisciplinary group also works to facilitate enrollment on, and adherence to clinical trials and routinely performs bone marrow aspirates, biopsies, and lumbar punctures. After IRB approval, we reviewed 1,007 arrivals with newly diagnosed AML at our center from 2008 through 2017. **Outcomes:** Our data show an increase in the number of newly diagnosed patient referrals, as well as a shift to more appointments that initiate in the out-

patient setting. Furthermore, with the EHD after induction chemotherapy, we have had increasing numbers of patient, laboratory, and infusion room visits at our clinic over this ten-year period. We have successfully developed an outpatient AML management system which allows AML patients to be closely followed outside of a hospital setting as long as they are afebrile, able to attend regular appointments, and possess a caregiver. We believe that initial appointments in the outpatient setting to establish care, complete diagnostic workup, and execute thoughtful treatment plans allow for a decrease in overall expense and provide improved patient quality of life and autonomy. With this team approach we can care for more newly diagnosed AML patients in the outpatient setting without compromising quality of care or the safety of our patients. **Discussion:** The continued shift to the outpatient care setting has been well established. We plan to capitalize on our existing infrastructure to bring induction chemotherapy to the outpatient setting. Outpatient induction chemotherapy has been studied and proven feasible in the context of a clinical trial (Mabrey et al), however, additional research is needed before this strategy becomes mainstream. Another upcoming development is a high-intensity core-treatment team to standardize our care model given our overall growth in the outpatient arena. We are also interested in studying cost analysis and understanding a patient's quality of life in the setting of outpatient care versus inpatient care. Challenges to outpatient care include the cost of local housing and the large catchment area for our patient population.

JL730

Transitioning from Corticosteroid Treatment to Fostamatinib in Patients With Immune Thrombocytopenia (ITP): Real-World Experience

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Introduction: ITP is a rare hematologic disease that results in autoimmune-mediated destruction of platelets. Symptoms include bruising and bleeding with a potential for fatal hemorrhage as well as significant fatigue and decreased health-related quality of life. First-line ITP therapy typically involves corticosteroids, which are associat-

ed with adverse effects that include osteoporosis, weight gain, hypertension, and infection. Fostamatinib is a first-in-class oral spleen tyrosine kinase (SYK) inhibitor, FDA-approved for the treatment of adults with chronic ITP who have had an insufficient response to a prior therapy. Fostamatinib prevents phagocytosis of antibody-bound platelets by macrophages by targeting the intracellular SYK signaling pathway. We describe the real-world experience of 2 ITP patients who were treated with steroids, experienced adverse effects, and elected to transition to fostamatinib. **Methods:** Case #1: Female patient, diagnosed with ITP in 1980s. She had received multiple ITP therapies including steroids, IVIG, splenectomy, and rituximab. In early 2018, she developed influenza and then bruising with a platelet count of 20,000. She was given Solu-Medrol 1 g IV for 3 days and platelet count rose to 52,000. She was then placed on a prednisone taper. Two weeks later, her platelets were 244,000, but dropped quickly to 50,000. She was unwilling to take additional steroids or IVIG, and elected to start fostamatinib. Prednisone was simultaneously tapered over a 2-week period. Case #2: Female patient with a history of chronic ITP and metabolic syndrome. She had been trying to lose weight and lost 20 pounds in the prior 3 months. In April, 2018, her platelets were 30,000. She was given a Solu-Medrol pulse of 1 g IV daily for 3 days. Platelets rose to 50,000, and she started on prednisone 50 mg daily. One month later, her platelet count was 83,000. She chose to stop steroids due to weight gain, 35 pounds in one month (after starting the steroids), and elected to transition to fostamatinib. **Results:** Case #1: After starting fostamatinib 100mg BID, platelets increased to 433,000 (Week 1) and 504,000 (Week 2) Fostamatinib was decreased to 100 mg QD. One month later, platelets were 562,000, and fostamatinib was discontinued. Off therapy response stabilized at >200,000 for >2 months. Case #2: Patient started fostamatinib 100mg BID and began tapering steroids over 4 weeks. Platelets rose to 183,000 over 2 weeks. She developed mild hypertension 4 weeks after starting fostamatinib, and her nebivolol was increased. She continued fostamatinib monotherapy, and the next two monthly platelet counts were 132,000 and 108,000 and have stabilized at >75,000. **Conclusions:** In a real-world

setting, fostamatinib appears to be an effective treatment for patients with chronic ITP and allows tapering of steroids over a 2- to 4-week period. An off-therapy response was seen in 1 patient after discontinuing fostamatinib. **Recommendations:** Fostamatinib may be taken simultaneously while tapering corticosteroid therapy for ITP over a 2- to 4-week period and may be effective for patients with chronic ITP who are unresponsive or intolerant to steroid therapy.

JL731

Transitions of Care in the Oncology Population: Improving Communication Between Ambulatory and Emergency Department Settings

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Background: The setting is an Infusion Center (IC) of a National Cancer Institute-designated Comprehensive Cancer Center in a large, urban, academic healthcare system in Southern California. The oncology Advanced Practitioner (AP), nurse practitioner or physician assistant, is responsible for assessing patients who present with abnormal vital signs or chief complaints not yet addressed by their primary oncology team. It is the role of the oncology AP to intervene and escalate care if necessary. When a patient presents to the IC with signs of infection and the decision is made to refer the patient to the Emergency Department (ED) for systemic inflammatory response syndrome (SIRS) or sepsis evaluation, the IC AP orders laboratory tests prior to transfer, in an effort to initiate the SIRS/sepsis workup. Upon review of these orders, it was observed that laboratory tests such as blood cultures, serum lactate, and/or urine cultures were repeated in the ED 47% of the time. **Approaches:** After collaborating with the ED staff and reviewing the triage/intake process, it was observed there was a lack of effective communication between the IC and the ED. Improvement in communication could reduce duplication of laboratory tests that have already been performed. In turn, this could reduce cost of supplies and nursing time while improving start time of intravenous antibiotics and fluid resuscitation for those patients who meet criteria for sepsis. To streamline the communication of interventions performed,

IC APs shall: 1. Create a separate note in the electronic health record that lists the site and draw time of blood cultures, serum lactate, urine culture and/or any additional interventions performed in the IC prior to the patient transferring to the ED. 2. Print the note and physically present it to the triage nurse in the ED at the time of patient transfer. The handing over of a physical note alerts the ED staff that interventions have already been performed and do not need to be repeated. **Outcome Measures:** Outcomes will be measured using a chart review to evaluate the number of patients who undergo duplicate intervention after being transferred to the ED for SIRS/sepsis evaluation. The evaluation period shall be no less than three months. Comparing post-implementation data to pre-implementation data should reveal a decrease in the number of repeat interventions performed as there should be improvement in the efficacy of communication between departments. **Summary:** Oncology APs manage patients who present with SIRS/sepsis in both ambulatory, emergency, and inpatient settings. Improving communication between the referring and receiving departments can decrease duplicate interventions and decrease costs. **Recommendations:** Suggestions for keeping this practice in place include providing quarterly updates to the ED and IC staff to ensure continuity of this process. The oncology AP will remain engaged and continue to evaluate potential needs for process improvements in applicable departments throughout the healthcare system.

JL732

Treatment History Summary: Transplant's Solution to the Daunting Task of Medical Documentation

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Background: Our hematopoietic stem cell transplant center historically required dictated monthly interim summaries for all patients by advance practice providers (APPs). These summaries had an established detailed format that was utilized by clinical and research teams. Monthly summaries added significant work load to transplant APPs. Further evaluation of the electronic health record

(EHR) has provided an alternative documentation approach to the interim summary. Our objective was to evaluate and implement a real time, efficient and concise documentation tool that would serve both clinician and research staff. **Methods:** A need was voiced by transplant APPs that monthly interim summary dictations and editing resulted in a significant work load burden for APPs. Monthly summaries did not consistently provide a real time outline of medical problems due to potential delay in transcription and editing. An alternative medical documentation tool that could provide real time, efficient, concise and improved access to a patient's complex medical problem list was requested. An APP documentation work group was formed and proposed different documentation structures to both transplant APPs and physicians. Specific goals for this project were: ease of data entry, no data entry limit, real time access of information, ability to access from different geographic locations via EHR, creation of data entry guidelines, and education modules for all users and auditing plan. **Results:** The documentation work group created a Treatment History Summary (THS) that organized transplant related specifics with past and present medical problems. The THS was presented to transplant APPs & physicians, consult services and research staff at which time feedback was incorporated into the document structure. The location of the THS in the EHR demanded that there not be any character limits to data entry, and that it be accessible to clinicians and research staff at all times. With the assistance of our IT colleagues an EHR location was identified with these characteristics. The THS structure was finalized and approved, and tutorial sessions started with transplant APPs, physicians, consult and research colleagues. The THS was piloted on a transplant team. Specific modifications were made based on the pilot findings, followed by the launch of the THS by the entire transplant service. Monthly interim summaries were discontinued. Auditing and education sessions have been ongoing with feedback and modification implementations. **Conclusion:** The THS provides a real time, efficient and concise method of medical documentation that serves APPs, physicians, and research staff in their care of patients. It has decreased documentation work load and allows for efficient

evaluation of medically complex histories that often require care in multiple care settings (clinic, hospital, ICU) without the delay of transcription and editing. **Implications:** The THS provides an innovative approach to the sometimes-daunting task of medical documentation by transplant APPs. It has succeeded in providing a concise reference document that can enhance real time care of often complex transplant patients. The innovation of this document by transplant APPs has led the development of an immunotherapy THS due to launch in August 2019.

JL733

Understanding the Attitudes and Roles of Oncology Advanced Practice Providers and Pharmacists in the Realm of Clinical Trials: A Pilot Survey

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Background: Oncology Advanced Practice Providers (APPs) are highly trained and skilled health care providers who contribute significantly to quality cancer care. They are identified as part of the solution to the projected shortage of oncologists. In 2015, 73.1% of ASCO Census practices reported employing APPs. There are over 5000 APPs practicing nationwide. Although APPs are integral members of the patient care team, there is little systemic information on total numbers of Oncology APPs, their practice setting and their roles (Bruinooge, et al 2018). Even less is known about how APPs function within the clinical trials arena. With clinical trial enrollment being only about 2-3% among the adult oncology patient population, APPs could play an important role in improving clinical trial accrual. APPs have the potential to be the perfect link between physicians and patients when introducing clinical trials. APPs have a solid understanding of treatment along the disease trajectory, are experts in symptom management and can easily discuss the trial from these aspects. In addition, APPs typically have more time to spend with the patient, compared to physicians. APPs not only have the knowledge and skills to help a participant understand what is involved in the trial, but also why the trial is being done and being offered to them (Ulrich, et al 2012). Finally, pharmacists have also been identified as key

oncology advanced practitioners who are involved in many aspects of patient care including treatment assessment, monitoring for potential adverse drug reactions & interactions, dosing and patient education (Board of Pharmacy Specialties, 2018). **Methods:** A descriptive cross-sectional study based on a 57-item survey to gain understanding of the attitudes, beliefs and roles in relation to cancer clinical trials among this group of health care professionals. **Results:** To assess validity and internal consistency of the survey, a pilot data collection was completed on 14 respondents in the state of Hawaii. The survey's internal consistency across the subscales was moderate to very high, with Cronbach's alpha ranging between 0.55 and 0.86. The survey found that the majority of advanced practitioners were interested in becoming more involved in the clinical trials process. The majority of APPs surveyed are registered as non-physician investigators through the National Cancer Institute (NCI) and were involved in a research committee at their institution. However, very few respondents stated that they were involved in recruitment, consenting, protocol development or being actively involved with a research base. The sample was found to be somewhat homogenous as 13 of the 14 respondents were part of a National Community Oncology Research Program (NCORP). **Conclusions:** This survey was found to be a valid tool to gain a better understanding of APPs and pharmacists attitudes and roles in the setting of clinical trials. **Recommendations:** As Oncology Advanced Practitioners are uniquely positioned to make significant contributions to cancer clinical research, more information is needed regarding the best way to utilize their skills. It is recommended that this survey be implemented on a national level as a first step in moving this issue forward.

JL734

Utilization of Advanced Practice Registered Nurse-Led Urgent Care in an Urban Academic Cancer Center

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Background: This year it is estimated there will be 1.7 million new cancer cases in the United States (American Cancer Society, 2019). Care of cancer patients can be challenging with complex-

ity of disease, treatment and related consequences associated with cancer care. Today cancer care has transitioned predominantly to outpatient centers which reduce need for prolonged hospital courses and health care costs. Many cancer patients seek care in emergency rooms for acute symptoms. However, most emergency departments lack providers trained in oncology to provide specialized care. Nationally approximately 80% of these patients are admitted from the emergency room (Ayers, 2018). Experts believe many of these admissions are unnecessary (Brooks, Jacobson, and Schrag, 2015). This poses an inconvenience for patients and increases health care costs compared to the cost of delivering care in the ambulatory setting. Major cancer centers have developed specific urgent care clinics using advanced practice nurses to address these needs (Ruegg, 2013). **Methods:** Based on a 6 week pilot in 2016, the APRN launched a clinic staffed by one nurse practitioner and a medical assistant. Patients were internally referred from clinical staff from the cancer center. In its third year, the urgent care team is comprised of four nurse practitioners, a registered nurse, and a medical assistant. This team is further supported by the medical center's dedicated triage nursing staff and cancer center infusion nursing staff. The clinic is open Monday through Friday. The clinic hours extended from eight hours to ten hours during the second half of the fiscal year to accommodate the demand. The data was collected via electronic medical record to extrapolate volume of visits and level of care provided. **Findings:** In the inaugural year, the average census was twenty patients per week. Between June 2017 and July 2018 there were 1,849 visits conducted by an urgent care practitioner (UCP). Between June 2018 and July 2019 there were 2,385 visits conducted by a UCP. The clinic transitioned from eight to ten hours half way between the fiscal year. In that fiscal year, the emergency department had 1,077 visits for which a cancer diagnosis was associated. Utilization of urgent care by cancer center patients increased by 28.9% from July 2018 to June 2019 compared to previous fiscal year. 136 patients were seen in RUMC emergency department following the UCP visit. Between June 2018 and July 2019, 31 patients were admitted to intensive care units. 54 were admitted under general medicine.

Summary: The utilization of an APRN led urgent care clinic increases the accessibility of care utilized in the outpatient setting. Experienced practitioners understanding the nuances of cancer care allows patients to reduce emergency department visits. **Recommendations:** The APRN led urgent care clinic is a feasible service and provides an efficient process for patients to receive emergent care. Future work includes expanding urgent care to satellite centers and coverage to weekends. This urgent care model can be adopted in other academic medical centers.

JL735

Utilization of an Advanced Practice Provider in a Phase I/Precision Medicine Program

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Background: With the passage of the 21st Century Cures Act in 2016, there is an increased need for cancer research and evolutionary oncologic drug discoveries. Through early-phase clinical trials and precision medicine, novel cancer treatments are being discovered at a pace never seen before, including treatments tailored through genetic profiling. There is a growing need for advanced practice providers (APPs) who are trained in early phase clinical trials and precision medicine. The utilization of an APP in a phase I/precision medicine program is highlighted here.

Approaches: In April 2017, a multidisciplinary partnership, the Ochsner Precision Cancer Therapies Program (PCTP), was formed between Ochsner Cancer Institute of New Orleans, LA and the Translational Genomics Research Institute of Phoenix, AZ, in order to provide the Gulf South region access to the latest in early-phase cancer therapeutics, research, and advanced diagnostics. Essential elements needed were identified and put into place, including implementation of a phase I/precision medicine APP. In order to support the program, 40% of the APP's clinical time is dedicated to research and clinical trials, and the remainder is devoted to supporting the primary

investigator in general oncology clinic. **Results:** As of April 2019, the Ochsner PCTP program has opened a total of 76 early-phase clinical trials. Of these trials, the APP was a sub-investigator for 78 clinical trials including some late-phase studies. As a sub-investigator, she attended site initiation visits for opening trials, met with trial monitors, saw patients for research visits, and helped to coordinate patient care. We have pre-screened 96,574 patients and enrolled 198 on clinical trials. Through a network partnership, a no-cost comprehensive next-generation sequencing tumor mutation panel was implemented for all patients with advanced cancers at our center to automatically screen for eligibility for precision medicine trials. As of June 2019, 1,010 patients have been sequenced. The program was awarded the coveted ACCC Innovator Award in 2018, and the APP was awarded system-wide APP of the Year Award. The program has raised nearly \$3 million in philanthropic funds. **Conclusion:** Through the immense amount of time and effort of our multidisciplinary team, the Ochsner PCTP was formed. The phase I/precision medicine APP has been instrumental in performing key operations including serving as sub-investigator, evaluating/screening potential patients through internal and external referrals, helping to educate active trial patients, coordinating sponsors, and participating in weekly PCTP rounding and monthly Molecular Tumor Board programs. In doing so, she has allowed the primary investigator time to see at least 50% more patients, open many more trials, and build the program. Through this early-phase research program, hundreds of cancer patients have benefited with the full extent yet to be realized for many years. **Implications:** The integration of an APP in a phase I/precision medicine program is feasible and valuable. As our program continues to grow, additional APPs will be needed. Future recommendations include more structured education for APPs in early-phase clinical trials as education is extremely limited and achieved mainly through clinical experience. ●